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PATHOLOGIC CONDITIONS IN THE BRONCHI AND THE ESOPHAGUS

A Roentgenologic and Endoscopic Study

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THERE are few, if any, fields in medicine wherein the necessity for co-operation between two or more specialties can be more urgent than in the domain of bronchoesophagology. A thorough clinical examination of the chest, followed by adequate roentgenology and finally by bronchoscopy or esophagoscopy for additional diagnosis or treatment, constitutes teamwork of the utmost importance.

Recent developments in body-section radiography, so-called laminography or planigraphy, form a real and significant addition to our diagnostic armamentarium, particularly in the area of the neck and upper chest. Of course, there are cases in which the history and clinical findings are so unmistakable that x-ray studies might almost be considered superfluous. Such instances are comparatively rare. Much more frequent are those in which we have only a vague and inaccurate history together with more or less indefinite symptoms and physical signs upon which to base our plan of procedure. In such cases, adequate roentgen studies, whether by flat plate or fluoroscope or both, are indispensable and may, occasionally by themselves, dictate the immediate management of the case. They not only disclose the fact that trouble is present, but often show fairly accurately just where it is. The following cases, selected from a recent series, illustrate these features rather well.

The first case is shown to indicate, except for a foreign body, normal anatomic relations.

Presented before the Minnesota Academy of Ophthalmology and Otolaryngology, May 11, 1945.

NOVEMBER, 1945

Case 1.—Mrs. E. K., aged fifty-one, was eating chicken soup when she felt something stick in her throat.

Roentgenology: A distinct, linear shadow appears in the esophagus below the lower border of the cricoid cartilage. This level is the most common site for the incarceration of foreign bodies in the food passages. The narrowest part of the upper esophagus is just behind and below the lower border of the cricoid, approximately in front of the sixth or seventh cervical vertebra. The space between the anterior vertebral wall and the trachea is occupied by the esophagus, the walls of which are normally collapsed so that in this state, usually, no air is seen in it. The posterior wall of the trachea and the anterior surface of the vertebral column are, normally, approximately parallel. The posterior segment of the cricoid cartilage is fairly distinct in many x-ray pictures and serves as a good guide, but must not be confused with a foreign body.

Endoscopy: A flat, triangular chicken bone was found and removed without much difficulty. Sometimes the points of the triangle may be sharp and for this reason care must be exercised not to traumatize the mucosa, nor to increase whatever spontaneous trauma may already be present.

Case 2.—A retired farmer, aged seventy, stated that two days before, while eating pork steak, he felt something stick in his throat. An attempt by another physician to push the foreign body down blindly caused the patient so much pain that the effort had to be abandoned. On the third day he came to Minneapolis, having had nothing by mouth for more than twenty-four hours.

Examination: There was marked tenderness in both sides of the neck. The temperature was 100.2°. There was much sugar in the urine, an excess of sugar in the blood, and other diabetic manifestations.

Roentgenology: In contrast with the previous case in which the posterior tracheal wall, which is in apposition with the anterior wall of the esophagus, was parallel



Fig. 1. Case 1. Bone in esophagus.



Fig. 2. Case 2. Perforating foreign body (bone) in esophagus, with abscess.

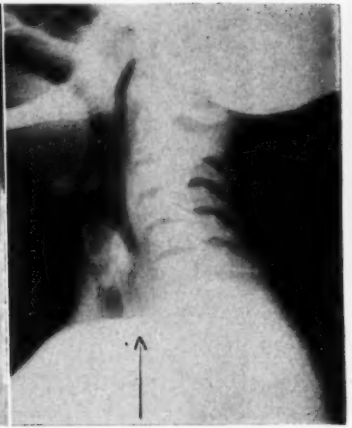


Fig. 3. Case 3. Cicatricial stenosis of esophagus, unsuspected.

to the anterior surface of the vertebral column, in this case there is a very definite increase in the antero-posterior diameter of the esophagus from the lower border of the cricoid cartilage downward for a distance of three or four vertebrae. This was an interesting finding since it indicated that there was something, either abscess or foreign body, or both, which was causing the swelling of the esophagus in this area. The roentgenologist was able to make out a slight density in the esophagus at this level which suggested a foreign body. Taken in conjunction with the extreme tenderness in the neck, we felt that the problem here was either a very sharp foreign body or an abscess, or both.

Endoscopy: While the local anesthetic was being applied to the hypopharynx, the patient suddenly expectorated a considerable amount of thick pus. This came from the esophagus and represented the evacuation of an abscess. There was a large amount of impacted food in the upper end of the esophagus. This was removed piecemeal, but we still felt that something else might be present to cause this impaction. Further search with the esophagoscope revealed a bone about $1\frac{1}{4}$ inches long and $\frac{1}{2}$ -inch wide, of which one end was embedded in the posterior esophageal wall, where an abscess had developed. The bone was freed and removed, and we found that the embedded end was needle sharp. With appropriate management for his diabetes, the patient made a good recovery. This case is another argument against the blind manipulation of foreign bodies. I have previously seen and reported two somewhat similar cases, in which bones were forced through the mucous membrane of the posterior wall by blind pressure from above. In one case it was inflicted by a doctor in his own throat.

Case 3.—Mrs. E. S., aged forty-seven, stated that at noon she had swallowed some food and it became stuck in her throat. Since that time (about eight hours) she had been unable to swallow anything. She remarked casually that for years she had chewed her food thor-

oughly, but she stated that she had never before had any trouble in swallowing.

Roentgenology: X-ray showed an irregular fullness in the upper part of the esophagus which might have been a nonopaque foreign body or a tumor or some other pathological condition extending inferiorly to about 10 cm. below the upper opening of the esophagus. Proper extension of the neck brings a much greater cervical region into the x-ray field than the ordinary position.

Endoscopy: Just below the entrance to the esophagus, we found an almost complete cicatricial stenosis, leaving an aperture only 3 to 4 millimeters in diameter at the left of the former esophageal lumen. This had undoubtedly been present for many years.

Comment.—This patient has unconsciously been reducing all her ingested food practically to a liquid state before swallowing. She has probably done this most of her life, since she has no recollection of esophageal trauma. But there is no question that she suffered such a trauma at some time during her childhood since we found many irregular masses of scar tissue in this region and these are certainly due to the action of heat, or corrosives such as lye or acids. On the day we saw her, she probably forgot herself and swallowed a large bolus of food which could not go through and which set up severe spasm. She then regurgitated the food, but the spasm persisted so intensely that nothing could pass through. A few years ago, I reported a somewhat similar case in which lye had been intentionally administered to an unsuspecting child by an unscrupulous foster mother for the purpose of diminishing the child's food intake.

Case 4.—Mr. A. G., aged fifty-four, was first seen several years ago with the history of expectoration of blood. After that he had no similar trouble until the present complaint, when he found a little blood in his mouth on arising at about eight o'clock. That afternoon and evening and again the next day there were more of these hemorrhages. He did not cough nor vomit, but seemed to "breathe" up this blood, as he put it. Phys-



Fig. 4. Case 3. Cicatricial stenosis of esophagus.



Fig. 5. Case 5. Straight pin in pharynx.

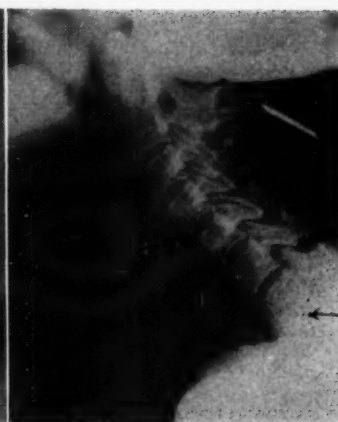


Fig. 6. Case 6. Non-opaque foreign-body (meat) in esophagus.

ical findings and the chest roentgenograms were practically negative.

Examination.—No visible bleeding source could be found except for streaks of blood in the trachea, indicating that the blood came from the lung. A small amount of frothy blood appeared in the opening of the right middle lobe bronchus, so I concluded that the hemoptysis originated in this lobe.

Comment.—As to the exact nature of the underlying pathology, no one can say definitely at present. It would seem that if this man has a pulmonary lesion which was responsible for his hemorrhage four years ago and is again now, and if it were something serious like a carcinoma far out in the periphery of the lung, it should now be visible in a main bronchus, and also, it should have caused definite general symptoms which he does not have.

Case 5.—D. M., aged four, was seen with the history that he had put an ordinary straight pin into his mouth a short time before.

Roentgenology: The pin was clearly visible, with the sharp point embedded in the postero-superior wall of the pharynx, the blunt end or head standing down against the tongue.

Endoscopy: Without anesthesia, by simple pharyngeal inspection and with forceps, the pin was removed. It was necessary to gain the child's confidence and to gamble somewhat on his good behavior because the pin might have been easily dislodged and swallowed, or inhaled into the trachea and bronchi. Blind manipulation without suitable visibility or instruments, could readily have led to such a complication. It is to emphasize that point that this case is mentioned.

Case 6.—Miss O. D., aged thirty-two, came in with the complaint that while eating some meat at dinner, it stuck in her throat causing complete obstruction of the food passage.

Roentgenology: Distention of the upper portion of the esophagus is again shown in this case, as in Case 2,

by the pushing forward of the tracheo-esophageal wall as seen in the lateral view.

Endoscopy: This case presented considerable difficulty because of a rather marked ankylosis of the mandibular joints, making it impossible for her to open her mouth more than half the usual width. This was further complicated by the projection of a prominent bridge of upper front teeth, as you can see in the x-ray plate. However, by passing the scope to one side of the teeth we were finally able to enter the esophagus and to remove the impacted meat.

Case 7.—R. B., aged two and one-half. The parents stated that about two weeks previously, the patient had been given peanuts to eat and since then he had been coughing and wheezing at times. Otherwise the child appeared perfectly well. He was active and played as usual with the other children. There was no fever at any time. His appetite was good.

Roentgenology: Pictures of the chest had been taken and showed marked emphysema of the lower and middle lobes of the right lung. As a result the heart was pushed to the left. This picture should be remembered when we discuss the next case. I have frequently cited Jackson's observation that during inspiration the bronchi dilate and during expiration they contract a little. If, therefore, a foreign body lodges in a bronchus and completely occludes the lumen, air cannot pass and the portion of the lung supplied by the bronchus or bronchi distal to the obstruction soon collapses. Atelectasis then develops. If, however, the foreign body only partly occludes the lumen, air will enter beside this by-pass valve during inspiration when the bronchus dilates, but cannot escape during expiration when the bronchus contracts. This leads to emphysema, which was the situation in the present case.

Endoscopy: A piece of peanut was removed from the right main bronchus, just above the level of the middle lobe bronchus.

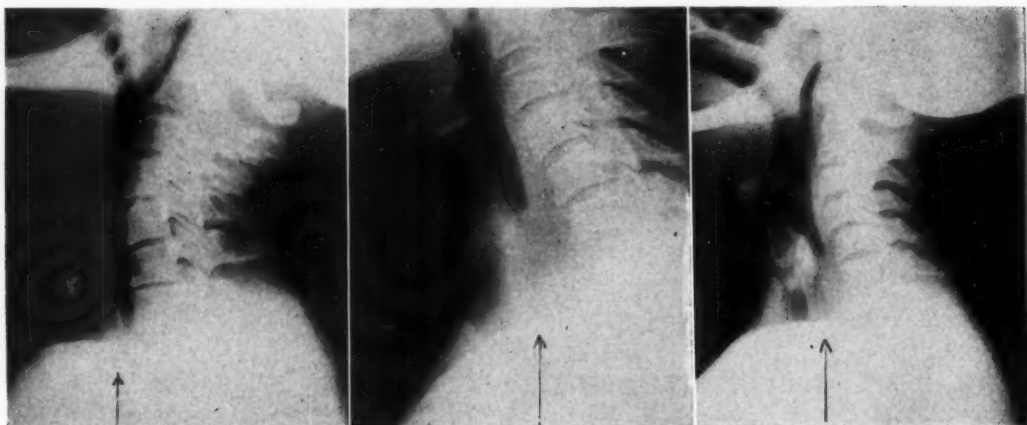


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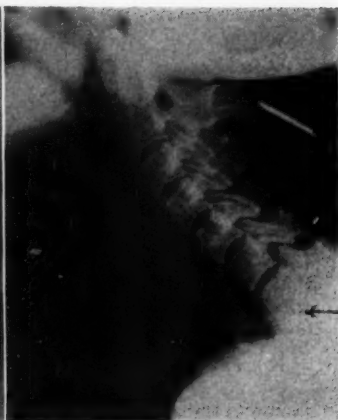


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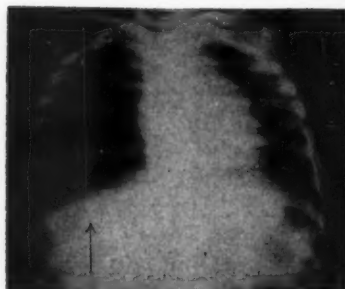


Fig. 7. Case 7. Inspiration. Peanut in right bronchus, above middle lobe orifice. Emphysema of right middle and lower lobes.

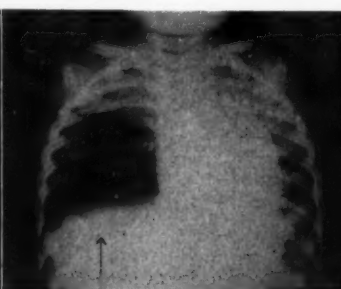


Fig. 8. Case 7. Expiration. Note mediastinal shift to left.



Fig. 9. Case 8. Peanut in right bronchus, below middle lobe orifice. Atelectasis right lower lobe.

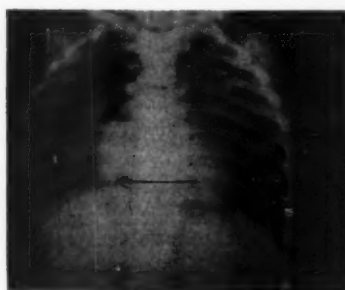


Fig. 10. Case 8. Six days later. Atelectasis has almost disappeared.

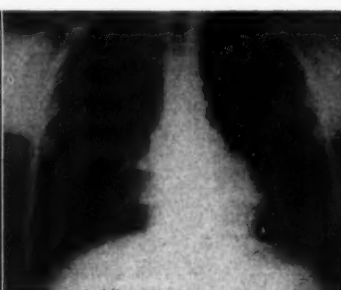


Fig. 11. Case 10. Popcorn in right bronchus. X-ray plate negative. Pendulum motion at fluoroscopy. Inspiration.

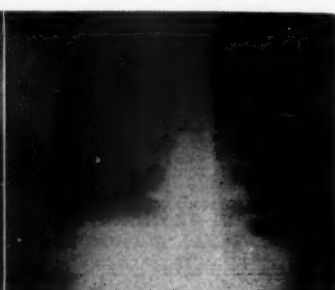


Fig. 12. Case 10. Popcorn in right bronchus. Expiration.

Case 8.—H. H., aged twenty months. The parents stated that while the child was eating peanuts two days before, he began to cough, and this had persisted. When seen by us the child had little fever, but his respiratory rate was about fifty-four per minute.

Roentgenology: The lower lobe of the right lung showed definite *atelectasis*, indicating a *total* obstruction of the bronchus in this region, as contrasted with the emphysema of the previous case. Furthermore, this case showed a heart pushed to the right, that is, in the direction of the atelectatic lung, in contrast with the heart pushed to the opposite side in the previous case of emphysema.

Endoscopy: A piece of peanut was found in the right bronchus *below* the orifice of the *middle* lobe bronchus, thus explaining why *only* the *lower* lobe showed atelectasis. The foreign body was removed.

Case 9.—Mrs. W. B., aged fifty-three. About two months before, she had had a profuse hemorrhage from the bowel. Since that time she had awakened at four or five o'clock every morning with a small amount of blood in her mouth.

Examination: As in the former case a thorough search was made for any possible bleeding point in the upper air or food passages. No such point could be found. Roentgen examination was negative. There was no visible bleeding source anywhere in the bronchial tree.

In the esophagus about 32 cm. from the upper teeth there was a somewhat superficial erosion at the right side, posteriorly. While this might have been a pre-existing ulceration, it is also possible that it may have been a transitory change due to slight trauma. It was cauterized with silver nitrate, and there was no more bleeding. Nevertheless, I suspect that she was probably regurgitating blood from the stomach, although *post hoc propter hoc* reasoning would indicate the erosion was the cause and the cauterization the cure.

Case 10.—J. W., aged eleven, stated that four days previously while eating popcorn he began to laugh and then to cough. A slight cough persisted. This was his only symptom. The temperature had been normal and there were no physical signs in the chest.

Roentgenology: The plates of the chest were negative and because of this it was felt that there was probably no disturbance in the lung. However, the roentgenologist did find a pendulum or side-to-side motion of the heart on inspiration and expiration, under the fluoroscope. During inspiration the heart appeared to move toward the right as though more air were *entering* the left lung than the right. During expiration more air seemed to *leave* the left lung than the right and the heart, therefore, tended to swing to the left. An obstruction in the right bronchus could account for such a motion, and with only this evidence and the symptoms



Fig. 13. Case 11. Open safety pin in esophagus. Removal by version.

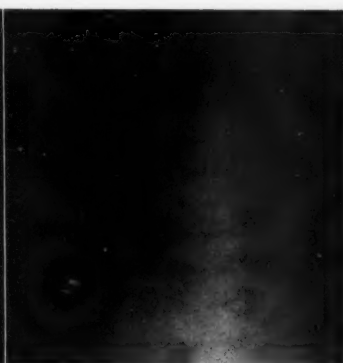


Fig. 14. Case 12. Open safety-pin in esophagus. Removal by point-sheathing method.



Fig. 15. Case 13. Emphysema of entire right lung due to peanut in right main bronchus, above superior lobe orifice.

of a mild cough in addition to his history, bronchoscopy was advised.

Endoscopy: In the right main bronchus, approximately at the level of the opening for the middle lobe, there was found a piece of popcorn. This was removed and the child went on to recovery.

Comment.—This case is cited chiefly to show the value of a history in conjunction with the pendulum motion of the heart.

Case 11.—M. B., aged fourteen months, swallowed an open safety-pin.

Roentgenology: The pointed end of the pin lay *transversely* in the cricoid constriction of the esophagus.

Endoscopy: Of the several methods commonly employed in the removal of open safety-pins I usually prefer the point-sheathing procedure, whereby the distal end of the esophagoscope is manipulated to a position directly above the sharp point of the pin. The latter is then drawn into the tube, and without releasing the firm grasp on the pin, pin and tube are removed together. The rounded lock or fastener end of the pin usually slides easily along the esophageal wall. Occasionally, it is better to do a version and turn the pin, if possible, so that the looped or apical end presents, after which removal is simple. This procedure was adopted in the present instance.

Case 12.—D. B., aged twenty-two months, was brought in with the history that the child had put an open safety-pin into its mouth and the excited mother had put her finger into the child's mouth and, feeling something sharp, she pushed it down into the esophagus. This was unfortunate, because it could probably have been removed with very little trouble from the pharynx by using a pair of forceps.

Roentgenology: The pin lay in the coronal plane in the upper part of the esophagus just at or beneath the cricoid constriction; the open end of the pin was, as usual, up.

Endoscopy: This case differs from the safety-pin case just cited, in that the technique for removal is limited

to either closing the pin *in situ* or removing it by the point-sheathing method previously described. Version is out of the question because the length of the pin is greater than the width of this infant's esophagus. The point of the pin was therefore freed from the esophageal rugae and was then drawn into the tube, whereupon the tube and pin were removed together.

Case 13.—T. O., aged five, at 6:30 p.m. while eating peanuts, began to cough violently. Respiration became difficult and he was brought into the hospital.

Roentgenology: Two hours later x-ray pictures showed mild but distinct emphysema of the entire right lung, especially on expiration. The fact that the *entire* lung was involved suggested at once that any foreign body present would have to be in the entrance to the right main bronchus, that is, *above* the opening of the *superior* lobe bronchus. This is in contrast with another case herein cited, wherein there was emphysema of the *lower* and *middle* lobes only, since the peanut was lodged in the right main bronchus *below* the orifice of the *superior* lobe bronchus but above the opening of the bronchus to the *middle* lobe.

Endoscopy: A high degree of inflammation and edema of the subglottic and tracheal tissues was found. This extended into both main bronchi and was undoubtedly due to the irritating effect of the half of a peanut which was found in the opening of the right main bronchus. This form of inflammation is sometimes known as arachidic tracheobronchitis and is said to be due to arachidic acid which is found in certain foods, such as peanuts. It is interesting to note what a difference there is in the reaction of different individuals to the same irritant. I have known a number of children who have harbored a piece of peanut in a bronchus for weeks with practically no symptoms, while the present patient developed a very severe reaction within two hours. Sometimes tracheotomy is necessary, but in this instance we were able to do without it.

Case 14.—Mr. F. D., aged thirty-seven. This was a case of extraordinary interest. The patient had a ton-

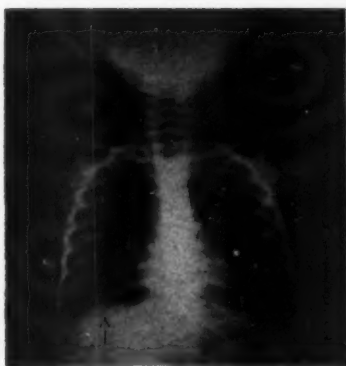


Fig. 16. Case 15. Right basal pneumonitis, due to peanut in right bronchus. Not a true pneumonia.

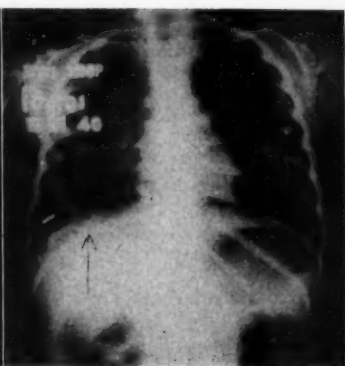


Fig. 17. Case 15. Three days after removal of peanut.

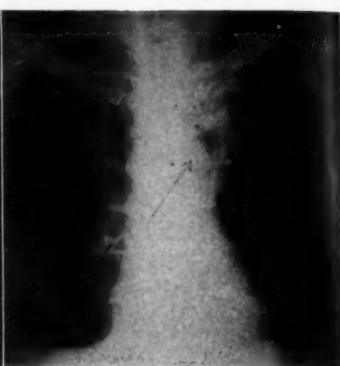


Fig. 18. Case 16. Atelectasis, left upper lobe. Aspiration of bronchial pus.

sillectomy three weeks prior to the time that I first saw him. About two weeks afterward he began to have nausea and dysphagia and the difficulty in swallowing had been increasing to the point that for several days he had been unable to take anything at all by mouth. When I saw him he was irrational and weak almost to the point of complete exhaustion. About a week before he had had a high fever for three or four days, but now his temperature was normal, as were also his laboratory studies. The breathing was stertorous and labored and he was markedly cyanotic.

Roentgenology: All x-rays were negative.

Endoscopy: With considerable difficulty because of a violent gag reflex, the pharynx and larynx were examined and no abscess or other inflammation secondary to the tonsillectomy, was present. There was, however, a paralysis of the left vocal cord and paresis of the right, which accounted for his dyspnea and cyanosis. Several able consultants had agreed that an esophagoscopy should be attempted, if possible, to determine the cause of dysphagia. Before this could be done the patient's already labored breathing stopped entirely. After considerable difficulty the respiration was re-established and tracheotomy was done. The breathing immediately became free, because the paralyzed vocal cords were no longer a problem. The general exhaustion, however, was so severe that the patient, who had become fairly clear mentally after the tracheotomy, became again irrational and, after ten hours, expired.

The autopsy failed to disclose a single positive gross fact with regard to the diagnosis. There was nothing in the pharynx, larynx or mediastinum to account for the vocal cord paralysis nor for the inability to swallow. The chest was negative. Because of these facts we suspected that a central lesion might be at fault. Section of the medulla showed no gross lesions, but microscopic study finally confirmed our suspicion of acute poli-encephalitis.

Case 15.—J. I., aged twenty months, had been eating peanuts three days previously when she began to laugh, then to cough, and had coughed almost constantly since. There was much wheezing, difficult respiration and a

temperature of 105. A definitely diminished percussion note was made out over the right chest.

Roentgenology: X-rays showed basal pneumonitis in the right side with patchy bronchopneumonia. However, this must be properly interpreted as an inflammation due to an irritating foreign body, and not as an ordinary pneumonia.

Endoscopy: There was a high degree of inflammation of the arachidic type involving the mucosa of the entire respiratory tract. A large piece of peanut was found firmly embedded in the upper part of the right main bronchus. This was removed, following which the child made an uncomplicated recovery.

Case 16.—S. K., aged fifty, had had a cough and a temperature for six weeks.

Roentgenology: The left upper lobe showed atypical cloudiness, possibly unresolved pneumonia or abscess or perhaps even foreign body in the left bronchus.

Endoscopy: No tumors nor foreign bodies were found, but at the junction of the left upper lobe and main bronchi there was an area of marked inflammation with pus. The latter was removed by suction, and the condition gradually cleared up.

Case 17.—E. A., aged twenty-six, stated that a few minutes before coming for examination she had put an ordinary straight pin in her mouth and had swallowed it. There was pain in the throat at and below the level of the larynx. Thorough search with the laryngeal mirror in the hypopharynx and larynx revealed no foreign body, but because of persistent severe pain the next day she was sent to the hospital.

Roentgenology: A distinct linear but somewhat irregular shadow appears in the anterior wall of the esophagus at the cricoid level. This does not, however, resemble a pin and may be seen on close inspection to be only the lateral or end view of a thin, prematurely calcified layer on the posterior surface of the cricoid cartilage. This appearance might be deceptive in a casual inspection of the plate. The entire alimentary tract was x-rayed and no pin was seen.

Endoscopy was not done, despite the fact that the



Fig. 19. Case 17. Calcified posterior surface of cricoid cartilage. History of swallowing pin. No foreign body.

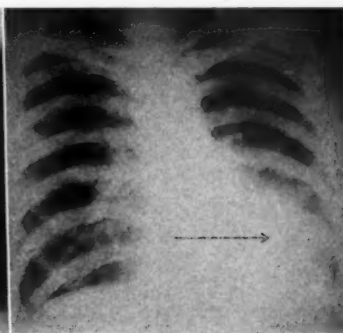


Fig. 20. Case 18. Left lower lobar pneumonia, recurrent, due to an inflammatory mass in bronchus.

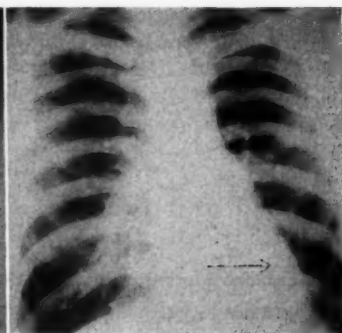


Fig. 21. Case 18. Several months after removal of tumor. No evidence of pathologic change in left lower lobe.

patient continued her complaint during the next forty-eight hours. After a few days she recovered without any interference whatever, confirming our suspicion that no foreign body at all had been swallowed. In other words, her history was completely misleading.

Case 18.—M. L., aged thirty-one, a young farmer, had had six attacks of pneumonia within two years, always in the left lower lobe. Between these illnesses he was perfectly well.

Roentgenology: Characteristic pictures of pneumonia were found with each attack, whereas the plates were entirely clear during the intervals between them.

Endoscopy: Near the lower end of the left main bronchus, i. e., in the lower lobe bronchus, a red, glistening, soft mass was found. This was attached to the bronchial wall and practically filled the lumen. From the fact that it was pedunculated we thought that it might have

been a papilloma. However, biopsy showed chronic inflammatory and granulation tissue so that we had to conclude that this was a post-inflammatory mass of granulation tissue which probably followed his first attack or perhaps some earlier disturbance in the chest, and, because of interference with the ventilation of the lower lobe, caused repeated attacks of inflammation in this area.

The foregoing reports illustrate not only the desirability, but the necessity, of correlating the history, clinical findings, roentgen studies and, if necessary, endoscopic procedures in cases presenting disturbances in the bronchi and the esophagus. Only in this way is it possible to give the patient an accurate diagnosis and prompt relief from his trouble.

LABORATORY AIDS IN THE EARLY RECOGNITION OF LIVER DISEASE

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THE early recognition of liver disease by means of physical findings alone is often difficult. The presence of jaundice or the presence of hepatic enlargement or tenderness at once attract the attention of the examiner. Frequently, however, these are evidences of advanced liver disease. It is naturally desirable to recognize such disorders in the incipient state. As in other branches of medicine, laboratory procedures have been found to be useful aids in the evaluation of liver disease. Despite the readily admitted limitation of these procedures it is felt that they may serve as val-

uable adjuncts to clinical experience, especially in the following respects:

Early Recognition of Liver Disease

Infectious hepatitis is characterized by a definite prodromal stage in the majority of cases. According to the observations of Barker, Capps, and Allen¹, the onset of symptoms preceded the appearance of jaundice by from one to three weeks in one half of their cases. A certain number of cases failed to develop jaundice although in all other respects the clinical picture was the same ("acute hepatitis without jaundice"). The impor-

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tance of early recognition and early treatment in hepatitis is stressed by these observers.

Cirrhosis of the liver undoubtedly exists in a latent or subclinical form for some time before jaundice or ascites appear. Modern nutritional therapy appears to offer some hope of arrest of the condition. Obviously if the disorder could be recognized early, better results from therapy should follow.

Objective Measurements During Therapy

Experience has demonstrated that too early resumption of activity in patients recovering from hepatitis may result in relapse and prolonged disability.¹ Physical means alone are frequently inadequate to detect residual liver damage in the convalescent state. Suitable liver function tests, employed serially may, however, serve as one method of determining the presence of a still active disease process.

Although a number of laboratory procedures designed to reflect functional impairment of the liver have been proposed, no one of them has proved adequate in all situations. This is understandable when one considers the many physiological functions of this organ and its great reserve power. The necessity of performing multiple tests on a single patient is becoming increasingly apparent. In an attempt to devise a suitable combination of laboratory tests, studies have been under way at the University of Minnesota Hospitals under the direction of Dr. C. J. Watson. Various series, some of which have been published^{6,17,18}, have been employed. The present discussion will be limited to the application of such procedures to the patient without obvious jaundice.

For laboratory tests to be useful in clinical work certain standards must be met. They should be simple to perform, entail no risk and little inconvenience to the patient, and be generally available. For the purpose of detecting liver damage or to assess the degree of liver damage present once the diagnosis is established, four laboratory tests are recommended. Performance of all four is advisable because of the recognized limitations and variabilities of each. The following are suggested:

1. Measurement of serum bilirubin level.
2. Detection of abnormalities of the serum proteins.
3. Detection of urobilinogen in the urine.
4. Measurement of bromsulphthalein excretion.

1. *Serum Bilirubin*.—The virtue of this determination in the apparently nonjaundiced patient is the recognition of latent icterus. The normal individual seldom exceeds a level of 1.0 mg. per 100 c.c. for the total serum bilirubin. The exact level that must be reached in the serum before jaundice becomes apparent clinically is difficult to state. It is difficult to recognize jaundice under the most favorable circumstances if the level of the serum bilirubin is below 2 mg. per 100 c.c. Modern laboratory methods employing the photoelectric colorimeter permit precise determination of the serum bilirubin. The method of Malloy and Evelyn¹² is particularly useful since it permits quantitative estimation of the Van den Bergh reaction. A knowledge of what portion of the total bilirubin reacts promptly to the diazo dye and what portion is of the indirect reacting variety is of considerable value. A slight modification of the Malloy-Evelyn technique by Ducci and Watson² permits the distinction of the two types of pigment in a quantitative manner. A measurement of the prompt direct component is obtained by a reading taken one minute after the Van den Bergh reagent is added to the serum sample. The total serum bilirubin, including both direct and indirect reacting fractions, is determined after alcohol has been added to the serum and sufficient time (fifteen minutes) has elapsed to bring out the maximum color.

Watson¹⁹ has found that the level of the prompt direct bilirubin (one-minute reading) seldom exceeds 0.2 mg. per 100 c.c. in the normal. Values in excess of this probably denote regurgitation of bilirubin that has been acted upon by the liver cell. In pure retention jaundice, as encountered in some hemolytic states, the value of the total bilirubin may be decidedly elevated but the one minute fraction scarcely altered. Such a finding immediately directs attention to the true nature of the underlying pathology.

The icteric index, although furnishing a little less information than the quantitative Van den Bergh reaction, has definite value in the recognition of latent jaundice. Though this is only a means of measuring the yellow color of the serum, it reflects increases in the total serum bilirubin quite faithfully. Values for the icteric index greater than 8 to 10 units denote abnormal increase. Care must be taken not to confuse carotinemias with true increases of bilirubin. Carotin in the serum, by virtue of its yellow color, pro-

duces a false elevation of the icteric index, a disadvantage not found with the quantitative Van den Bergh reaction. The substance can be readily detected, however, by simple extraction of the serum with petroleum ether. Bilirubin will not enter the ether layer whereas carotin is soluble and will readily enter it.

A simple expedient, too seldom employed in a search for evidence of liver disease, is the examination of the urine for bilirubin. The renal threshold for this pigment is not definitely known. The presence of bilirubin in the urine is in all probability related to regurgitation jaundice, i.e., to increases in the direct reacting component of the serum bilirubin. As is well known, bilirubinuria is not a feature of retention jaundice, hence the term "acholuric" often applied to such disorders. Neefe and his coworkers¹⁵ in a study of hepatitis, have shown that serial examination of urine specimens for bilirubin can be employed to detect hepatic dysfunction in a very early stage of the disease. Similar observations have been reported by Gellis and Stokes⁴ and by others.¹ Though the method employed, the methylene blue test, has aroused some controversy^{3,5}, the value of testing the urine for bilirubin is unquestioned. Of the many methods available for this purpose, Harrison's spot test⁷ is as sensitive and useful as any. This has been still further simplified by Hawkinson, Watson and Turner.⁸

2. Detection of Abnormalities of Serum Proteins.—Recently two laboratory procedures have become available that assist materially in detecting the presence of liver disease. The cephalin-cholesterol flocculation test of Hanger⁶ is already well known and has been widely employed. MacLagan¹¹ has described a somewhat similar procedure known as the thymol turbidity test. Strictly speaking, these are not tests of liver function but rather furnish evidence of liver cell irritation. They probably depend upon the alterations in the plasma proteins that occur as a result of parenchymal liver disease. Hence positive results are to be expected in cirrhosis and in hepatitis, and negative results in jaundice due to extrahepatic obstruction. They have a place in the recognition of liver disease and also are of some value in differential diagnosis.

The flocculation test of Hanger consists of the addition of a small amount of serum diluted with saline to a colloidal suspension of cephalin-

cholesterol complex. Readings are taken at twenty-four and forty-eight hours and the degree of flocculation recorded in terms of one to four plus. The test, although simple, requires meticulous preparation of the reagents if false positive reactions are to be avoided. The mechanism of the test, i.e., the alterations in the plasma protein responsible for the flocculation, have been recently described by Moore and his associates.¹⁴

The thymol turbidity test is performed by adding a small amount of serum diluted with saline to a buffered solution of thymol. The resulting turbidity is compared with the standards used in the Kingsbury method¹⁰ of determining urine protein. The reading is made at the end of thirty minutes, an obvious time advantage over the cephalin-cholesterol test. Values are recorded in arbitrary units related to the degree of turbidity. Normal sera does not exceed a value of 4 and pathological values may range as high as 30. According to MacLagan¹¹ a high percentage of cases of hepatitis and cirrhosis give abnormal readings whereas cases of extra-hepatic biliary obstruction usually give negative values. Evidence suggests that the test is chemically related to the cephalin-cholesterol test and indicates alterations of the plasma protein, especially an increase in the gamma globulin fraction. Comparative data as to the relative value of the thymol turbidity test and the cephalin-cholesterol test soon to be published²⁰ reveal that the two are in quite close but not complete agreement. The two tests are not identical. The serum of normal dogs, in fact of all animals, uniformly yields a strongly positive cephalin-cholesterol test. I have not obtained a positive thymol turbidity test with any dog sera, even though the animals had severe liver damage as a result of carbon tetrachloride administration.

3. Detection of Urobilinogen in the Urine.—Urobilinogen is formed in the bowel. It results from the reduction of bilirubin by anerobic bacteria in the colon. A portion of the urobilinogen so formed is reabsorbed into the portal circulation and carried to the liver. The exact fate of this chromogen is not known, but it would appear that the normal liver removes it. In the presence of liver disease large amounts of urobilinogen may appear in the urine. Even slight disturbances of liver function may result in the occurrence of urobilinogenuria. Therefore the dem-

onstration of this substance in abnormal amounts in the urine is an indication of liver cell dysfunction.

Urobilinogen is a colorless substance. It can be detected by the pink to red color that results when Ehrlich's reagent (paradimethyl-amino benzaldehyde in HCl) is added to the urine. The addition of sodium acetate intensifies the color in a true reaction and helps to eliminate false positive tests. Normal urine will seldom give a positive Ehrlich test. Therefore, the employment of even the qualitative Ehrlich test is of some value in the search for evidence of liver disease. The value is enhanced if tests are made on urine samples secured at different times of the day or preferably over a period of several days.

The method of Watson¹⁶, that of collecting all of the urine for twenty-four hours and extracting an aliquot, has been widely employed to determine the quantitative excretion of urobilinogen. The normal individual does not exceed 3 mg. per twenty-four hours by this method but pathological values may range as high as 50 to 100 mg. The method, although not technically difficult, is somewhat time consuming. A simple means of expressing the Ehrlich reaction in a quantitative fashion would therefore render the urine urobilinogen test more generally available.

Such a test has been recently devised by Watson and his associates.²¹ This procedure, although less precise than the extraction method, is sufficiently accurate for clinical purposes. The urine specimen is collected for a two-hour period, between 2 p.m. and 4 p.m. Experience has shown that excretion of urobilinogen is usually maximum in the afternoon. The color intensity of the Ehrlich reaction is compared in a simple comparator block against a series of standard tubes. The value is expressed in terms of so-called Ehrlich units. One such unit is approximately equivalent to one milligram of urobilinogen. On the basis of observations made on a series of normals, a value of greater than 1 or 1.2 Ehrlich units for the 2 to 4 p.m. period can be considered abnormal.

The method is recommended for serial study in patients suspected of liver disease. Collection should be made on three successive days since there is considerable day-to-day variation.

4. Measurement of Bromosulphthalein Excretion.—The clinical value of this test has been amply demonstrated in the years that it has been employed. The chief disadvantage is that it is of

little value in the presence of regurgitation jaundice. One hesitates to employ the test if the icteric index is greater than 20 or the serum bilirubin greater than 2.0 mg. per 100 c.c. The dosage of 5 mg. per kilo of body weight is recommended and the clearance time taken as 45 minutes. As shown by Mateer and his coworkers¹³ the normal individual will show no retention of the dye in the blood stream after 45 minutes. For clinical purposes the test is probably the most reliable laboratory aid available to measure liver function in the individual without jaundice.

Conclusions

The employment of four laboratory procedures is recommended in the search for evidence of liver disease in the patient without apparent jaundice. Since no clinical laboratory test is infallible and since those concerned with functions of the liver are subject to considerable variation, multiple tests are needed. The procedures as described can be carried out with a minimum of discomfort to the patient. Laboratory tests cannot be more than aids to the clinician. They do not make diagnoses. If properly employed, though, they can be extremely useful in detecting certain disorders early and in following their progression or regression.

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COMPLICATIONS OF PNEUMONIA

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THERE are a goodly number of complications that may occur in pneumonia, and in general these complications can affect any organ or group of organs within the body. There are, as far as I know, no complications that are characteristic or pathognomonic of either the atypical or the typical forms of pneumonia. The mucous membrane and skin can be affected in the form of herpes labialis or toxic rashes, or there may be a rash due to the profuse perspiration that often occurs during pneumonic infections. To these disturbances of the skin may be added those that occur secondarily to the use of the sulfonamides, the specific sera, or to the antibiotics such as penicillin. In the more severe forms of the pneumonic infections, purpura and metastatic abscesses of the skin sometimes occur.

The gastro-intestinal system is affected in many ways. Nausea, vomiting and anorexia are not uncommon. Occasionally a parotitis is present. Acute dilatation of the stomach has been known to occur and distention and ileus are not uncommon in the severer types of the infection. Pneumococcal peritonitis when present can only be diagnosed positively by aspiration of the peritoneal cavity and the demonstration of the causative organism in the peritoneal exudate. Jaundice indicates either a severe toxic form of hepatitis or it may represent an actual viral or bacterial invasion of the liver. In either instance the presence of jaundice suggests the need of a liver-protective diet which is high in carbohydrate, high in protein and low in fat. In addition, amino-acids should be given. The parenteral use of insulin and vitamins aid in the recovery of the patient. Bowel

disturbances, of course, are not infrequent during the severe stages of the illness.

The osseous system is seldom involved in pneumonia. Arthritis may follow a pneumococcal infection, and in the atypical forms of pneumonia the severe paroxysms of coughing sometimes cause rib fractures.

The genito-urinary system shows very few complications as a result of pneumonia. There may be an orchitis. Acute nephritis is seldom seen, but cystitis may occur as may also pyelitis or pyelonephritis. Hematuria and resulting renal failure from anuria may complicate the pneumonia. This usually occurs as the result of toxic reactions from the sulfa drugs or as the result of post transfusion reaction if incompatible blood was used for a transfusion.

The central nervous system is frequently affected by the pneumococcal infection. During the severe stages of the illness, the patient may exhibit delirium, mania, and great psychomotor activity. Unconsciousness and stupor sometimes ensue. Delirium tremens is not infrequent in the alcoholic who has pneumonia. Meningismus may be present, and meningitis when it does occur has the usual symptoms of meningitis due to any other type of organism. The diagnosis of meningitis is established by lumbar puncture and the demonstration of the pneumococcal organism in the spinal fluid. Encephalitis can complicate either the typical or atypical forms of pneumonic infection, but seems to be commoner in the atypical type of the disease. Pneumococcal abscess of the brain is possible from an extension of a pneumococcal-otitic infection or as the result of a

pneumococcic sinusitis. Peripheral neuritis although uncommon may complicate pneumonia.

There are a great number of complications that occur in the cardiovascular system. If there is a direct extension of the infection to the pericardium, pericarditis results which is either fibrinous or exudative. If fibrinous, a friction rub is usually heard, and if exudative, the friction rub disappears and the signs of pericardial effusion are present. The effusion may be either serous or purulent or any combination of exudates. If the fluid is sufficiently great in amount, a cardiac tamponade results. This tamponade can be relieved by aspiration of the pericardial sac, and if suppuration is present, surgical drainage of the sac may be indicated. The diagnosis of pericarditis is facilitated by the use of the electrocardiograph and by repeated x-ray examination of the chest. Myocarditis is not common in pneumonia, but it sometimes occurs. This may be the result of toxic changes within the heart muscle or it can be caused by direct extension of the infection into the myocardium. Sometimes myocarditis is caused by a toxic reaction from the sulfonamide drugs that may have been used in the treatment of the pneumonic infection. An endocarditis, when present, may be of two types; it may be either bacterial or it may represent a rheumatic endocarditis. If it is the rheumatic type, the endocarditis is usually not recognized until some months after the acute infection has subsided when signs of rheumatic valvulitis, characterized by typical murmurs, may appear for the first time in the heart. A bacterial endocarditis evidences itself by a clinical picture of septic temperature, petechiae, changing heart murmurs, and the presence of a positive blood culture. Congestive heart failure when it is present is recognized by the increase of venous pressure, and it should be treated by the use of digitalis. Circulatory collapse occurs in pneumonia and is recognized by the signs of peripheral circulatory collapse. Auricular fibrillation may be present during the acute infection. This condition indicates the need of digitalis and quinidine in appropriate therapeutic doses. Occasionally, particularly in the atypical forms of pneumonia, an acute cor pulmonale develops. This complication is recognized by the signs of right heart failure and also by specific changes in the electrocardiograms as well as changes that occur in the pulmonary conus on x-ray examination of the heart. Various degrees of manifestations of phlebitis may be present dur-

ing the infection. An arteritis, associated occasionally with thrombosis of the arteries, is sometimes seen.

The respiratory system being the prime organ affected in pneumonia has, of course, a great number of complications. These vary from sinusitis and otitis media, pharyngitis, tonsillitis to laryngitis. Asthmatic seizures may occur during the acute phase of the infection, and in some instances these seizures of asthma may occur for the first time during an acute pneumonic disease and persist as asthmatic bronchitis or bronchial asthma for years following the original infection. Bronchitis is present with the pneumonic process, and it, too, may continue after the acute infection has subsided. Bronchiectasis can occur as a result of a primary pneumonic infection. In severe infections the lung may be the seat of abscess formation or even gangrene. Delayed resolution of the pneumonia is frequently seen in the atypical forms of the disease. It may be stated, however, that unresolved pneumonia is a rare complication. Most instances of so-called unresolved pneumonia will resolve their diagnosis into either empyema, encapsulated effusion, bronchiectasis, atelectasis, bronchial obstruction with suppuration, tumors within the lung, carcinoma of the lung, tuberculosis, or even foreign bodies in the bronchus. Atelectasis is common during the acute phase of pneumonic infection, and in the atypical types of pneumonia, thromboses of the pulmonary arteries and arterioles may be seen. Hemorrhages with hemoptysis, clinically, often occur during pneumonia. This is particularly true in the atypical forms. Emphysema may follow pneumonia.

Almost all pneumonic infections have an associated pleuritis which can be either fibrinous or exudative. The fibrinous type is characterized by the presence of pain on respiration and a friction rub is usually heard on examination. This pain can be controlled by immobilizing the chest and by the use of opiates. In the exudative type of pleuritis the fluid may be either serous, purulent or hemorrhagic. Aspiration of the pleural cavity should be done to establish the type and character of the fluid present. Sufficient fluid should be removed for diagnostic study and for both animal and bacterial study. In the serous effusions further aspiration is not indicated unless there is respiratory embarrassment. The purulent effusions and empyemas may be treated by surgical drainage which may be either closed or open. The local use of penicillin within the empyema

cavity and the parenteral use of sulfonamides and penicillin is believed by some authorities to be efficacious in the treatment of empyema. In general, however, it may be stated that with an empyema, surgical consultation is indicated. If the empyema is neglected, an empyema necessitans may occur, or the empyema may rupture into the lung and thus into a bronchus producing a pleural-broncho-fistula. When this is associated with air within the pleural cavity, we may have a pyopneumothorax in conjunction with the pleural bronchial fistula. The empyema may rupture through the skin to the outside. Spontaneous pneumothorax is sometimes present as a complication of pneumonia.

Mediastinitis is difficult to diagnose, as is also mediastinal empyema.

In conclusion, it may be emphasized that a large number of complications occur during the course of a pneumonic infection and that these complications may affect any organ or group of organs within the body. There are, apparently, no characteristic complications to indicate whether the disease is the typical or the atypical type of pneumonia. The complications that occur are due either to toxic changes or to direct extension of the infection or they are the result of a metastatic extension of the infection. Since a great number of these complications are amenable to either chemotherapy, serum therapy, surgical therapy or antibiotic therapy, it is necessary that we be on constant alert during any pneumonic process to recognize early the presence of a complicating disease so that the proper therapy may be instituted.

TOTAL EXCISION OF THE PATELLA FOR ARTHRITIS OF THE KNEE

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DURING recent years considerable interest has been manifested in a relatively insignificant bone—the patella. Although Putz, of Strasbourg, according to Albert practiced complete excision of the patella as far back as 1860 and concluded that the bone was not essential for normal gait, there were few followers of his teaching. Only occasionally did reports of complete extirpation of this bone appear in the literature, and even then the operation was advocated for only such lesions as tuberculosis, osteomyelitis or tumor. Modern interest in the subject began in 1936 and 1937 with the investigations of Blodgett and Fairchild and of Brooke^{4,5} on the effect of partial and total removal of the patella for fracture of this bone. Since that time, at least twenty articles have been written on the subject and most of the reports have dealt with the treatment of fractures of the patella by either partial or total excision of this bone.

Considerable difference of opinion exists regarding the importance of the patella. Brooke concluded that the presence of the bone was due to phylogeny alone and that it neither arises as

a response to a functional need nor serves a useful purpose when formed. To substantiate his argument, he drew attention to the field of comparative anatomy and pointed out that moles and the slowly moving sloth have well developed patellas while the kangaroo, which has enormous quadriceps power, has no patella at all. His study of ten cases in which total patellar excision was performed revealed no loss of power in the knee, and a study of fresh anatomic specimens revealed that the speed of extension and flexion apparently was enhanced by excision of the patella. This view of the relative unimportance of the patella is not shared by everyone. Herzmark, Thomson and other authors have expressed the opinion that the patella not only serves a useful purpose in protecting the femoral condyles against trauma, particularly when the knee is flexed, but also enhances quadriceps power by decreasing friction and by keeping the quadriceps tendon well in front of the axis of flexion and extension of the knee. They concluded, therefore, that partial excision when feasible is preferable to total excision of the bone.

The present study of results obtained by total excision of the patella for arthritis of the knee joint was stimulated by Berkheiser's report on the

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EXCISION OF THE PATELLA—YOUNG AND REGAN



Fig. 1. Anteroposterior and lateral roentgenograms of right knee of patient forty-eight years of age who had bilateral osteoarthritis of the knees. Patellofemoral type of arthritis and a posterior loose body are evident.



Fig. 2. Anteroposterior and lateral roentgenograms of same knee as that represented in Figure 1. One year after operation, showing patella and loose body excised.

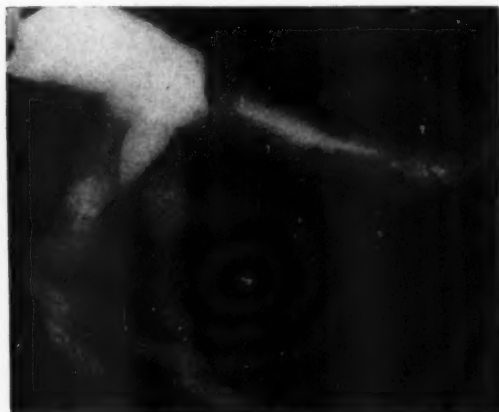


Fig. 3. Range of motion in right knee of same patient as that represented in Figures 1 and 2. Twenty-two months after operation.

same subject in 1939 and by the scarcity of similar reports in the literature. Tippet in 1938 advocated excision of the patella in cases of osteoarthritis. In personal communications to Berkheiser, both Lambrinudi and Britain stated that their results with this operation have been good. Lambrinudi had performed the operation in five cases and Britain had performed it in ten cases. Britain said that the procedure was of value only in the patella-femoral type of arthritis.

Berkheiser reported eleven cases in which patellectomy was performed for arthritis of the knee. He said, and it should be restated, that the operation is not a cure for arthritis but is a means of overcoming a mechanical impediment to function. The operation is done to relieve pain and

improve function, not to procure a perfect knee. At the time of operation, Berkheiser noted the presence of hypertrophic synovitis, obliteration of the suprapatellar pouches, osteophytic overgrowths on the femoral condyles and tibial tubercles, loose degenerating cartilage and pannus formation. All of these changes likewise were noted in our series of cases. He limited his operation to simple excision of the patella and did nothing about the changes that were present in adjacent anatomic structures. We occasionally performed cheilotomy or removed loose bodies in cases of osteoarthritis and performed synovectomy in several cases of rheumatoid arthritis. We believed that such procedures might improve the final result. Berkheiser obtained good results in eight cases and fair results in three cases. In one of the three cases in which the results were classified as fair, the operation had been performed shortly before the publication of Berkheiser's report and it was difficult to evaluate the final result. In another case, psychosis developed after the operation had been performed. Berkheiser concluded that the operation is of definite value as it decreased the pain and improved the function of the knee in all of the eleven cases.

Our report is based on twenty-one cases of arthritis of the knee in which excision of the patella was performed at the Mayo Clinic. In fourteen of the cases, the patients had osteoarthritis of the knee and there was moderate or severe involvement of the patella. In six cases, the arthritis was of the rheumatoid type. In the remaining case, traumatic arthritis had followed

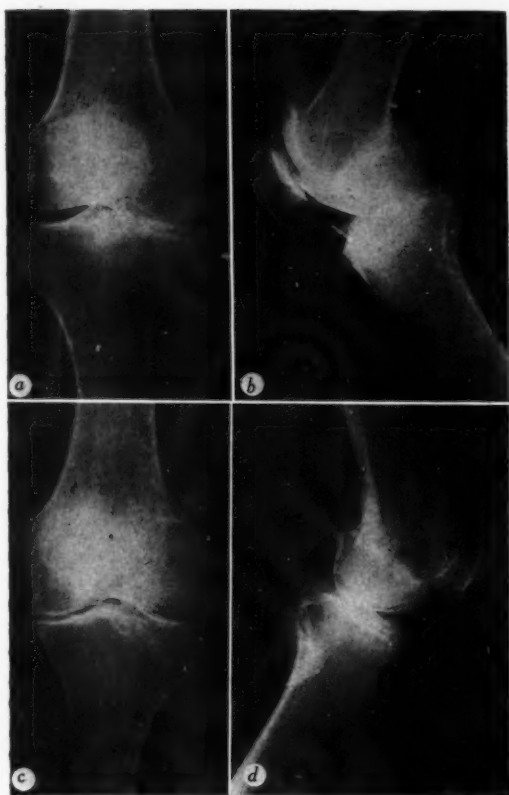


Fig. 4 *a*, Anteroposterior and, *b*, lateral roentgenograms of right knee; *c*, anteroposterior and, *d*, lateral roentgenograms of left knee. Patient was fifty-six years of age and had bilateral osteoarthritis.

recurrent dislocation of the patella. The ages of the patients ranged from eighteen to sixty-six years; the average age was forty-seven years. Fifteen of the patients were women and six were men. Figures 1 to 9, with their various parts, represent some of the situations encountered.

Both of the patellas were excised in five of the cases. In three of the five cases, the arthritis was of the osteo-arthritic type; in the two remaining cases, it was of rheumatoid type.

All of the patients complained of varying degrees of pain in the knee when they attempted to use it in walking and even when it was moved while no weight was being borne upon it. Sixteen of the patients had flexion deformities of the involved knee and only three patients of the entire group had normal motion before operation. The remaining two patients had complete extension but limited flexion of the involved knee. Flexion deformities ranged from 10 to 45 degrees.

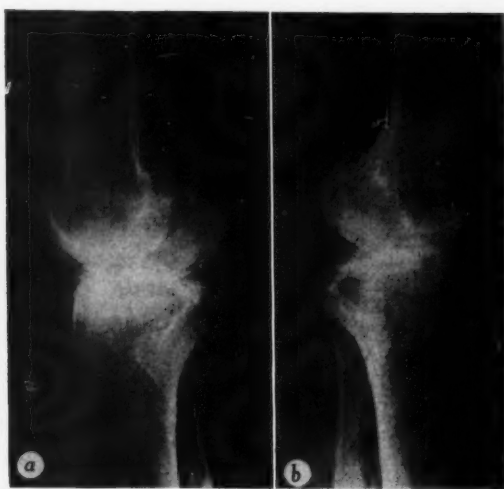


Fig. 5. Lateral postoperative roentgenograms of *a*, right and, *b*, left knees of patient represented in Figure 4. Patellae excised.

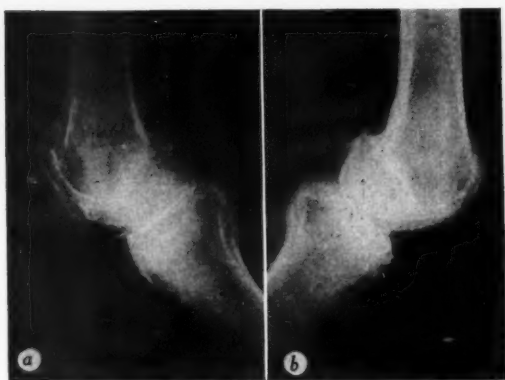


Fig. 6 *a*, Right and, *b*, left knees of patient represented in Figures 4 and 5. Roentgenograms taken two and a half years after operation, showing regeneration of right patella. Excellent clinical result. Range of motion 170 degrees to 60 degrees. "Was a complete cripple and now almost 100 per cent normal."

The excision of the patella was accomplished in each case either through a vertical or parapatellar incision and care was taken to suture the reflected portions of the patellar tendon with either chromic catgut or silk sutures after the enucleation of the patella. Postoperative immobilization in extension was maintained for seven to ten days by means of a plaster cast. At the end of this period, physiotherapy was started. In some cases, motion was regained early, while in others, several months were required for the return of motion.

EXCISION OF THE PATELLA—YOUNG AND REGAN

It is difficult to evaluate the end results of any treatment of arthritis and it is particularly mal before operation and a perfect joint cannot be secured. Likewise, the disease is not eliminat-



Fig. 7. Anteroposterior and lateral roentgenograms of patient thirty-three years of age, who had osteo-arthritis of left knee. Patella excised with complete relief of pain and range of motion 175 degrees to full flexion.



Fig. 8. Anteroposterior and lateral roentgenograms showing posttraumatic arthritis of left knee with flexion deformity. Patient was sixty-two years of age. Patella and semilunar cartilage excised and cheilectomy performed. Complete relief of pain for two and a half years and range of motion 180 to 90 degrees.

difficult to evaluate the end results of the surgical treatment of this disease. The joints are not nor- ed by operation and the type and extent of involvement vary in each case. What we hope

for is relief of pain with re-establishment of a useful range of motion and correction of deformity. With these objectives in mind, each patient must be considered separately and the result evaluated accordingly.

In seven of the fourteen cases of osteo-arthritis, the results were excellent. The patients do not have any pain in the involved knee. They are able to extend the leg to an angle of at least 170 degrees and to flex it to an angle of at least 90 degrees. One of the patients, who previously was a complete cripple, reported that she now is "almost 100 per cent normal." One patient is able to bowl "without ill-effect." Another patient, who formerly had to use crutches, now is walking normally. A bilateral operation was performed in two of the seven cases in which the results were classified as excellent. In another of these cases, the operation recently has been performed on the other knee. As the patient in this case had not been dismissed from the hospital when this paper was written, the results of the second operation could not be evaluated. In still another case, the patient now is contemplating having the operation performed on her other knee.

In the remaining seven cases of osteo-arthritis, the results were classified as follows: good in four cases, fair in two cases and poor in one case. In the cases in which the results were classified as good, the pain was relieved but there still was some limitation of motion. In the cases in which the results were classified as fair, the pain was relieved completely or almost completely but the range of motion in the affected joint was only a few degrees. In the case in which the results were poor, a painful genu varum developed as a result of a destructive process in the medial tuberosity of the tibia. This process was believed to be due to a neurotrophic disturbance.

In nine of the fourteen cases of osteo-arthritis, the pain was relieved completely. In four of the five remaining cases, the severity of the pain is much less than it was before the operation. In all of the fourteen cases, follow-up data have been obtained for from one to four years after the operation.

In the cases of rheumatoid arthritis the results were difficult to evaluate. It is well known that it is difficult to improve this condition by surgical treatment. In four of the six cases of rheumatoid arthritis, follow-up data were obtained for

from two and a half to four years after the operation. In all of the four cases the patients now have less pain than they had before the operation and all have said that they have been bene-



Fig. 9 a, Anteroposterior and, b, lateral roentgenograms of right knee; c, anteroposterior and, d, lateral roentgenograms of left knee. Patient was twenty-four years of age and had bilateral osteo-arthritis of knees. Before operation pain so severe he had to stop working. Patellae excised and loose bodies removed. Able to return to work. Range of motion 170 to 70 degrees. "Able to bowl without ill effects."

fitted by the operation. In three of these cases, synovectomy also was performed; in the remaining case, a capsulotomy also was performed with the patellectomy. The results were good in three of the four cases and fair in the remaining case. In this case, the severity of the pain decreased after the operation but the patient believes that the arthritis has progressed and limited the motion of the affected joint.

Good results were obtained in the one case of traumatic arthritis. The severity of the pain was decreased and normal motion was obtained in the affected joint.

In combining all groups only one patient stated that he had not been helped by operation. All but one of the twenty-one patients said that they had less pain after operation while nine said that they had no pain at all.

Summary

This paper is based on twenty-one cases of arthritis of the knee in which patellectomy was performed. Both of the patellas were excised in five of the cases. In all of the cases, follow-up data were obtained for from one to four years after operation. The pain was completely relieved in nine cases and partially relieved in eleven cases.

In cases of osteo-arthritis, the result was better than it was in cases of rheumatoid arthritis.

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A SUMMARY OF THE NEURO-SURGICAL CASES TREATED IN A U. S. ARMY GENERAL HOSPITAL

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THIS paper is presented to demonstrate some of the work carried out by the Neuro-Surgical Service of a United States Army General Hospital over a period of six months.

The circumstances in which a general hospital functions are so varied that the experiences of one such hospital may be entirely different from those encountered by another. Procedures satisfactory for one such hospital may not be efficacious for another. Many factors aside from the actual surgical condition will determine the type of treatment that should be carried out in the separate installations. For instance, a general hospital operating at a peak load, with early arrival of their cases and rapid evacuation would not by right do peripheral nerve surgery. On the other hand a general hospital in the rear, where evacuees might arrive two to three weeks after injury and where evacuation was slow might justifiably perform some selected operations of this type.

Although this particular hospital was the first general hospital in the line of evacuation, it was at no time less than 150 miles behind the front

lines. Its line of evacuation was by ambulance, air, water and rail. Only a small percentage of wounded were admitted under twenty-four hours after injury and all battle casualties had passed through an evacuation hospital. The evacuation time from the hospital varied, but after the peak of the fighting it was sometimes three weeks before patients could be evacuated to the rear, where they passed through one or more installations before being evacuated to the zone of the interior.

During the six months of operation the Neuro-Surgical Section of the Surgical Service examined either on their own service or in consultation approximately 577 cases. These cases were classified for the most part into three groups:

1. Injuries and diseases of the brain.....167
 2. Injuries and diseases of the spinal cord and column194
 3. Injuries and diseases of the peripheral nerves...216
- Total....577

Injuries and Diseases of the Brain

One hundred and sixty-seven patients were admitted to the Neuro-Surgical Service because of traumatic and nontraumatic cerebral condi-

The material for this article was encountered during the first six months of operations in 1943.

tions. Of this group, 160 had received some sort of head trauma; sixty-nine having been injured by metallic fragments or the concussion of shell, bomb, land mine, or grenade explosions; fifty-six had been in motor vehicle accidents; and the remaining thirty-five had been injured in some other manner. All of these 160 patients had suffered sufficient trauma to have definite cerebral concussion. Ninety-seven of these 160 patients had cerebral concussion without the presence of any form of intracranial hematoma, hemorrhage, or skull fracture. The time interval between the receipt of the injury and admission to this general hospital varied between one and eighty-seven days with an average of eighteen days. Only twenty patients of this group were admitted for treatment within five days of their injury. Therefore, in most instances, the acute phase of the cerebral concussion had subsided upon arrival at this hospital.

The treatment administered was generally symptomatic after careful examinations had been made to eliminate any surgical condition such as an intracranial hematoma. These patients were allowed up out of bed and engaged in various forms of mental and physical exercise just as soon as this was tolerable. A vigorous effort was always made to prevent these persons who had complaints of persistent headaches, dizziness and fatigue from becoming chronic bed patients and invalids. These individuals, as well as those having skull fractures, were frequently out of bed and working about the wards within one or two weeks after their injuries providing such activity did not aggravate their symptoms. The average stay in the hospital for the simple cerebral concussion cases was twenty days per patient; and for various individuals, ranged from one day to as long as 120 days. Forty-one of this group of ninety-seven patients were ultimately returned to full duty. It was necessary to reclassify and discharge twelve individuals to limited duty because of the persistence of physical or mental sequelae. Nineteen patients were returned to Army hospitals in the United States as unfit for overseas military service. The remaining twenty-five were evacuated to rear hospitals to secure further treatment and reclassification.

Skull Fractures.—Included within the group of 160 traumatic cases, were fifty-six having skull fractures in addition to cerebral concussion. For-

ty-two of these fifty-six had either simple or compound skull fractures, but no foreign bodies. Of the remaining fourteen cases, two had skull fractures and also subdural hematoma. One had a skull fracture with meningitis. Ten of these patients had skull fractures and intracranial foreign bodies, three of them also having brain abscesses. The time interval between the receipt of the injury and admission to this hospital varied from one to fifty-nine days, the average being fifteen days.

Of the total number of fifty-six skull fracture cases, twenty-seven had compound fractures; and six had compound, depressed fractures. Twenty-four of these fifty-six casualties were operated upon in order to debride the wound, elevate depressed fractures, and secure, if possible, a primary closure of the scalp. Nineteen of this group of twenty-four individuals had been operated upon prior to admittance to this hospital, which evidences that an early emergency procedure had been accomplished near the site of the accident. Two others were operated upon only at this hospital, and the remaining four individuals had operations performed prior to arrival and also at this hospital.

The average time of hospitalization in these fifty-six cases was twenty days and varied from being discharged on the day of arrival to remaining as long as eighty-five days. The disposition rendered in these fifty-six individuals resulted in twelve soldiers returning to full military duty, six returning to limited duty in the theater of operations, seventeen going back to the United States for prolonged treatment, and evacuating eighteen to rear hospitals for longer care and further disposition. Three individuals died.

Intracranial Foreign Bodies.—Another subgroup of the traumatic cases included those who had intracranial foreign bodies. There were ten such patients having shell fragments located intracranially. (These have been grouped with those having skull fractures.) These casualties arrived for treatment at this hospital on the average of twelve days following injury. Six had been operated upon prior to arrival with removal of the foreign bodies and debridement of the wounds. Three were operated prior to admission and also at this hospital. The foreign bodies were removed if they produced, or were likely to pro-

duce, irritative cerebral phenomena, provided the operative approach would not traverse an infected field.

One of these patients was assigned to limited duty, seven were returned to the United States for prolonged care, and one died. The single unoperative soldier was also returned to the United States as unfit for military duty. The average period of hospitalization in this hospital was thirty-three days.

Brain Abscesses.—Three individuals in the group of traumatic cases had brain abscesses, in addition to severe cerebral concussion and compound skull fracture. These three were operated prior to admission, and also at the general hospital. Three abscesses had developed about pieces of intracerebral shell fragments and loose skull bone fragments. In two cases the abscesses containing foreign bodies were removed from the cerebrum in toto. In a third patient the abscess was aspirated, and a debridement of the necrotic part of a fungus cerebri done. In all these cases, a drain was left in the abscess space from forty-eight to seventy-two hours. Two of these patients improved markedly and were sent to military hospitals in the United States for further treatment and disposition. The third soldier who had suffered a severe head injury developed fungus cerebri followed by hemolytic streptococcus and staphylococcus meningitis and broncho-pneumonia. This patient died twenty-two days after the receipt of injury. Additionally, another patient who developed type nine pneumococcic meningitis following a simple, incomplete right temporal skull fracture recovered completely following sulfadiazine therapy.

Intracranial Hemorrhage.—Nine cases were classified as having some form of intracranial hemorrhage. One of these had a skull fracture complicated by an extradural hemorrhage which was surgically evacuated at another hospital. He was ultimately returned to limited military duty. Another individual suffered a skull fracture and a diffuse subdural hemorrhage. He was operated upon and the hematoma removed, but after remaining unconscious for five days following the accident, he died. One patient developed an intracerebral hematoma without having had a head injury. Ventriculography aided the localization of this mass, and after craniotomy with evacuation of the hematoma, this patient improved and

was sent back to the United States. There was one patient who suffered a head injury without skull fracture and then developed a subdural hematoma. Following operation at this hospital, he improved and was returned to the United States for further care. Another patient had a severe cerebral concussion and skull fracture. He was unconscious until death thirteen hours after admission to this hospital. No operation was performed, the hematoma being found at autopsy. In this group of nine, there were additionally four cases of suspected subdural hematomas, one having a skull fracture, and three having had head injuries without fracture. Three of these individuals were returned to hospitals in the United States, and the fourth was evacuated to a rear hospital.

Brain Tumor.—In addition to the traumatic cases thus far discussed, nine patients were studied for the presence of suspected brain tumor in this hospital. Two were operated upon here. One had a cerebellar medulloblastoma excised and made an excellent recovery. He was returned to a military hospital in the United States for further care. Another had a large cerebral astrocytoma which was partially excised and a temporal decompression done. This patient was essentially unchanged post-operatively and was evacuated for further future treatment. Because of intracranial pressure symptoms threatening the lives of these two persons, the operations were performed only as emergency measures in this combat theater. One ventriculogram and two encephalograms performed upon three other individuals of this group were negative in localizing brain tumors. All of these patients were eventually evacuated or sent back to Army hospitals in the United States for more prolonged and extensive study for the presence of cerebral neoplasma.

Injuries and Diseases of the Spinal Cord and Spinal Column

One hundred and ninety-four patients were examined in whom there was a possible lesion of the spinal cord or spinal column. The Orthopedic Service referred for consultation all of their patients who had the slightest question of spinal cord or nerve root involvement. Thus, fifty-nine of these ultimately were diagnosed lumbosacral disease and in twenty-three no neurological disease could be demonstrated.

In the remaining 113 cases, the diagnoses were as follows:

Prolapsed nucleus pulposus.....	33
Cases with some neurological signs suggestive, but not conclusive of a prolapsed nucleus pulposus.....	21
Gunshot wounds with nerve root involvement.....	13
Closed wounds of the spinal cord.....	4
Fractures and dislocations.....	21
Miscellaneous	21

Prolapsed Nucleus Pulposus.—Although no definite figures are available, it is estimated that the thirty-three cases diagnosed "prolapsed nucleus pulposus" were between 3.5 and 4.7 per cent of the total number of cases presenting back complaints examined in this hospital.

Laminectomies were performed in ten of these patients. In six of the ten, a prolapsed nucleus pulposus was found. In the remaining four patients a hypertrophic eminence was found on the posterior lip of the body of the vertebra in one patient. One patient presented a soft disc between the eighth cervical and first thoracic vertebrae which did not protrude at the time of the operation. In a third patient a large varicosity of the spinal veins was demonstrated. In the fourth, the exploration was negative.

Of the ten patients operated upon, seven had satisfactory results as far as relief of pain was concerned. One of the patients had no relief of pain after the removal of a large disc from between the fifth lumbar vertebra and the first sacral vertebra and it was concluded that he had another disc at the next higher level which was not explored at operation. A second patient had some persistent pain following operation which was undoubtedly due to operative trauma of the nerve root. The third patient who did not have satisfactory relief was reoperated upon, and marked arachnoiditis was demonstrated.

Only three of the seven patients who had satisfactory results were returned to duty. Of the twenty-three patients in whom a definite diagnosis of prolapsed nucleus pulposus was made, but without operative confirmation, and of the twenty-one patients in whom there was suggestive, but not conclusive evidence, only thirteen were returned to duty. Twenty-nine of these forty-four patients were evacuated to the zone of interior and twelve were evacuated to the rear pending a disposition.

This experience confirms the knowledge that

the soldier with a prolapsed intervertebral disc is a poor risk as far as foreign service is concerned. It also leads to the conclusion that only those exceptional patients who have sufficient pain to make transportation difficult should be operated upon in the combat theater.

Gunshot Wounds of the Back with Spinal Cord or Column Injury.—Thirteen cases of gunshot wound of the back with spinal column injury were treated. Six of these showed direct involvement of the cord; two showed evidence of contusion of the cord; three presented evidence of root pain without cord involvement and in two there were compound fractures of the vertebra without cord involvement. Only one of these patients was seen under forty-five hours following injury. The others were first observed from thirteen to thirty-one days after injury.

In this group laminectomies were performed by us in three instances. In one case a laminectomy had been performed previous to admission to this hospital.

No deaths occurred in this group, but the results were uniformly poor in those cases with paralysis, even after the removal of foreign bodies and bone fragments from the spinal cord.

Where bladder paralysis was present a suprapubic cystostomy was done in all cases except one, in which tidal irrigation, was instituted.

There were two cases of cerebrospinal fluid fistulae. Both closed spontaneously. Meningitis developed in one. This was controlled by sulfadiazine.

Only one of this group of thirteen cases returned to duty. The remainder were reclassified and returned to the United States or evacuated to the rear before final recommendation for disposition could be made.

Miscellaneous Cases.—The twenty-one miscellaneous cases were diagnosed as follows:

Old tuberculosis of spine with root pain.....	1
Myositis	2
Residual of old poliomyelitis.....	3
Residual of an old hematomyelia.....	1
Residual of a prolapsed nucleus pulposus (OP 1937).....	1
Arachnoiditis	2
Multiple sclerosis	2
Friedreich's ataxia	2
Ill-defined condition	3
Epiphysitis	3
Infectious myelitis	1

Injuries and Diseases of the Peripheral Nerves

Included in this report on peripheral nerve injuries are only those cases in which the nerve lesion was definite. All questionable cases were omitted. There were 249 peripheral nerve lesions that occurred in 216 patients. In thirty-three patients, more than one nerve was involved. The preponderance of injuries occurred to nerves located in the upper extremities. In patients in whom more than one nerve was involved, the ulnar and median nerves were most commonly injured. The site of injury in these cases was the upper arm where the ulnar and median nerves are proximal anatomically.

Clinically, there was complete loss of function in the majority (59 per cent) of nerve lesions when examined at the time of admission. The average length of time between the injury and admission to the hospital was twenty-six days. The majority of lesions that showed return of function during their stay in the hospital began to have signs of return either at the time of admission or within two weeks thereafter. Nerve function was determined by repeated examination of both superficial sensation and muscle power. Stimulation with faradic and galvanic electrical current was also used.

The problem of treatment of nerve injuries was difficult. It was realized that the sooner after an injury a nerve repair was performed the better the result. However, it was also necessary to consider that the majority of those patients with injuries to major nerves would eventually be returned to the zone of interior and that the person who directs the rehabilitation should perform or attend the operation. The position of our hospital was such that the majority of the patients were not seen until three weeks following the injury. The policy adopted was that if the wound of a patient permitted an operation within three weeks of admission the nerve was repaired at this station, since it was estimated that it would be six to eight weeks longer if operation were deferred until he had reached the zone of interior.

The average length of time between admission to the hospital and operation was sixteen days. This figure is deceptive in that the range extended from two to seventy-eight days.

In one patient a nerve exploration was performed three weeks following the injury. The nerve and surrounding tissues were soft and edematous. In this patient a longer interval

should have elapsed prior to operation so that the tissue reaction could have subsided.

Surgical procedures were performed on the peripheral nerves of forty-seven patients (19 per cent). There were fourteen formal nerve sutures, two nerve grafts, twenty-three neurolysis with or without nerve transplantation, three in which foreign bodies were removed from within the nerve sheath, three in which a Hersage procedure was done, and two neurectomies. Injuries of the brachial plexus were not operated upon because it was believed that in order to determine the status of the injury a prolonged period of observation was necessary.

Formal Nerve Suture.—At the time of operation all the exposed nerves were stimulated with faradic current. Gross appearances were deceiving in regard to electrical conductivity. Those nerves that were completely severed or contained a neuroma that encompassed the entire nerve obviously did not conduct a stimulus across the injured area. There was another group, however, in which the nerves had the appearance of having undergone secondary changes following a concussion or contusion. These were firm and cordlike, thinner than normal, with a pearly white color. This group usually did not conduct a faradic electrical stimulus. In those nerves that did not transmit a stimulus and in which the involved area was localized sufficiently to permit section and suture of the nerve without a graft, a section and formal nerve suture was performed.

Suture material consisted of either fine black silk or human hair. At first blonde hair was used since presumably it created less tissue reaction but because of the technical difficulties of visualizing it against the background of vital tissues it was necessary to change to brunette hair. We found this material very satisfactory.

An attempt was always made to relieve tension on a suture line by gaining length from flexion or extension of the appropriate joint. If sufficient length were not obtainable by this procedure a neurolysis with or without a nerve transplant was performed.

Nerve Graft.—In two patients nerve grafts were performed. One graft was placed in a defect in the radial nerve. The ninth intercostal

nerve was used as the donor and three cables, 6.5 cms. long, were sutured into the defect. Another nerve graft was placed into a defect in the peroneal nerve. The posterior cutaneous nerve of the thigh was used as the donor and three cables, 9 cms. long, were sutured into the defect. The grafts were sutured with fine black silk or human hair.

Neurolisis and Hersage.—Neurolyses were performed on those nerves in which there was a partial block of nerve impulses or irritation of the nerve from constricting scar tissue. The nerves were transplanted when necessary to obtain an adequate bed.

Hersage procedures were performed on three nerves that were found to be firm and thinned out over a distance exceeding 4 cms. and in which intraneural fibrosis seemed to be constricting the neurofibrils. The value of this procedure is open to debate. No concrete deductions as to its value were obtained.

Intraneural Foreign Bodies.—Small metallic foreign bodies were removed from within the epineural sheath in three nerves. Each of these patients experienced severe pain locally and over the sensory distribution of the nerve when pressure was applied to the skin over the foreign body. There were small areas of tissue reaction around the foreign bodies, but they were not excised for fear of injuring more neurofibrils. It was felt that these areas of reaction would subside after removal of the inciting factor.

Neurectomies.—In one patient the medical cutaneous nerve to the forearm was cut for relief of severe pain over its distribution. The nerve had been injured by shell fragments four months previously. The neurectomy relieved the pain. In another patient the ninth and tenth intercostal nerves were severed for relief of segmental pain. Following this, there was anesthesia over the previously painful area but the patient then experienced marked hyperesthesia over the eleventh intercostal nerve. This nerve was injected with 95 per cent alcohol and relief was obtained.

Procedures Performed Other Than on Peripheral Nerves.—There were three patients with scalenus anticus syndromes upon whom the

scalene muscles were cut. Two obtained complete and one partial relief. All returned to duty.

There were four patients with true causalgia. Sympathetic nerve blocks with novocaine were performed on all four. Three of the four patients obtained temporary relief; the other obtained no relief. In two of those who obtained relief, preganglionic sympathectomy was performed. One obtained complete relief of all pain, and the other did not. However, it is doubtful that in this patient all the sympathetic fibers were severed since some vasospasm was still present in the affected hand postoperatively. In one patient, the lumbar sympathetic nerves were injected with 95 per cent alcohol. The pain was reduced about 60 to 70 per cent. In the fourth patient, a neurolisis was performed and relief from pain was obtained.

Following all operative procedures, motion in the involved part was begun as soon as wound healing permitted. If a splint were applied to maintain a fixed position following a nerve suture it was removed about the fourteenth postoperative day and physiotherapy begun. Very generous co-operation from the physiotherapy department was obtained. When the patients were unable to attend the clinic, the physiotherapist treated them in the ward.

Comment on the final result of these nerve lesions is impossible because of the inadequacy of the follow-up data. Therefore, this report includes only the number and type of nerve lesions and the therapy instituted and is to be considered only a preliminary report.

Summary

1. The Neuro-Surgical Service examined 577 patients.
2. In this total there were 167 cases of injuries and diseases of the brain, 194 cases in which the spinal cord or spinal column was affected, and 216 cases in which there was a peripheral nerve injury or disease.
3. There were seventy-three operations performed in this group, including ten cranial operations, sixteen operations on the spinal cord and spinal column, and forty-seven nerve operations.
4. The majority of patients observed had passed through one or more hospitals before admission.
5. Among the entire group of patients, three

(Continued on page 958)

CLINICAL-PATHOLOGICAL CONFERENCE

DIAGNOSTIC CASE REPORT

ARTHUR H. WELLS, M.D., and D. R. GOLDISH, M.D.

Duluth, Minnesota

DR. A. H. WELLS: We are about to present a most remarkable diagnostic problem. Your attention to the details of the clinical presentation should lead you to the proper diagnosis.

DR. D. R. GOLDISH: A forty-one-year-old school teacher was first admitted to the hospital on February 28, 1945, approximately five months before her death, with a history of having had an almost continuous "cold" in the upper respiratory tract for a period of five months with a cough productive of thin whitish sputum. The onset was heralded by a sore throat lasting a few days. There had been some fullness in the chest, loss of appetite and strength, dyspnea on exertion, and she had lost 10 pounds in weight. However, she continued to teach school until the day of admission. The physical examination was not unusual, excepting for rather harsh breath sounds in both bases of the lungs. Her temperature tended to be slightly subnormal and the pulse ranged between 80 and 100 per minute. The white blood cell count ranged between 4,100 and 7,400 with approximately 70 per cent neutrophils and 30 per cent lymphocytes. The hemoglobin was 12.5 grams, and the red blood cell count varied from 3,300,000 to 4,000,000. The red blood cell sedimentation rate was 30 mm. in 60 minutes by the Cutler method. An x-ray examination of the chest revealed a diffuse increase in the lung markings consistent with the diagnosis of bronchitis and possible pneumonia in the lower portion of the left lung. An x-ray examination also revealed what was considered right ethmoidal and maxillary sinusitis. Roentgenologic studies of the gall bladder, stomach, duodenum and colon were considered normal. An electrocardiogram was interpreted as diffuse myocardial disease, perhaps, right ventricular enlargement with an A V heart block, grade I. While in the hospital the patient was noted to have a marked dyspepsia and pain in the lower abdomen for several days, with considerable tenderness in the right lower quadrant. There was a history of tenderness in this area over a long period. A gradual improvement with penicillin and sulfadiazine therapy was noted. She regained a few pounds in weight but there was no return of vigor and energy. Her right lower quadrant complaints persisted, leading to an appendectomy on May 11, 1945. I explored the patient's abdomen throughout and found no significant changes besides those of the appendix. The histologic

study of the appendix revealed a rather extensive hyaline-like deposit in the connective tissues and particularly in the blood-vessel walls throughout much of the appendix. There was also a most unusual infiltration with clumps of remarkably large plasma cells particularly in the submucosa (Fig. 1). There followed an uneventful postoperative convalescence and the patient was discharged from the hospital after three weeks. She was readmitted on July 27, 1945, one week before her death. She was obviously in congestive heart failure and had a sudden onset of severe cyanosis and dyspnea shortly after admission. There was fluid in the right pleural cavity and cough productive of frothy, whitish sputum. There was also some edema of the ankles of three days' duration. Her blood pressure was 135/110. It had never been recorded elevated at any previous examination. The veins on her neck and arms were distended and there was a high venous pressure noted along with a marked cyanosis of the lips and fingers. Her entire face was unusually livid. Her heart was considered mildly enlarged on percussion. Diastolic sounds were loud over the whole precordium. There were no murmurs. Many extrasystoles were noted and the rate was 90 per minute. There was some shifting dullness in the flanks and generalized abdominal tenderness. The pitting ankle edema was considered a grade II in severity. An electrocardiogram (Fig. 2) led to the diagnosis of (1) right axis deviation; (2) indeterminate intraventricular block; (3) auricular ventricular heart block; (4) diffuse myocardial disease. An x-ray examination of the lungs revealed increased amount of infiltration in the lower portion of both lungs as compared with the previous admission. Her white blood cell count was 5,200, hemoglobin 11.5 grams, and red blood cell count 4,000,000. There were 76 per cent neutrophils, 23 per cent lymphocytes and 1 per cent monocytes. The icterus index was 7. A urine analysis was essentially normal. Because of unusual childish activities and expressions she was seen by a psychiatrist (Dr. L. E. Schneider) who found that she had had a similar manifestation six years ago. Her sensorium was normal and she was emotionally depressed, rather childish and fearful of what her family thought of her. She showed no improvement with digitalis, oxygen therapy and other means of treating her obvious congestive heart failure. There developed a peculiar grayish-blue color of her face, especially of her lips, in spite of the oxygen therapy. The cyanosis appeared to be out of all proportion to the amount of dyspnea. There

From the Clinical-Pathological Laboratory of St. Luke's Hospital, Duluth, Minnesota, Arthur H. Wells, Pathologist.

CLINICAL-PATHOLOGICAL CONFERENCE

was no orthopnea. Oxygen therapy did not affect the extreme cyanosis. She was very apprehensive during the last few days. Death occurred rather unexpectedly.

DR. A. H. WELLS: The case is now open for diagnoses.

PHYSICIANS: Metastatic malignancy in the lungs and on peritoneal surfaces. Pick's disease. Chronic pericarditis. Unresolved bronchopneumonia. Pulmonary tuberculosis with amyloid disease. Leukemia. Periarthritis nodosa. Multiple myeloma with widespread amyloidosis.

DR. A. H. WELLS: You have made several very excellent diagnoses. That of Dr. Hirschboecks' is correct. This forty-one-year-old woman died as the result of multiple myeloma with amyloidosis, of a type typical of this disease. The remarkable feature in this case is that the patient died of a typical chronic congestive heart failure as a result of extensive amyloid deposit in the myocardium. Postmortem bone-marrow studies from bodies of vertebrae, ribs and sternum all revealed approximately 75 per cent typical "myeloma cells." These were very suggestive of large plasma cells with frequently eccentric nuclei in which there were closely compact, deeply staining clumps of chromatin similar to the nucleus of an erythroblast. The cytoplasm frequently had a pale, perinuclear zone and the remainder of the moderately abundant cytoplasm was deep blue. Amyloid was found in the heart muscle, alveolar walls, bundles of smooth muscle, in the esophagus, stomach, and small and large intestines, periepithelial areas of the breast ducts, walls of small arteries and veins throughout much of the body, especially in the lungs, intestines and uterus, and to a lesser extent in connection with voluntary muscles including the tongue and rectus muscle, and in the malpighian bodies of the spleen and adrenals. The liver and kidneys had no amyloid. The amyloid deposits in different areas varied somewhat in the intensity of staining with the same and different stains. They stained uniformly well with azocarmine. However, congo red, iodine and sulphuric acid and methyl violet stained the hyaline-like substance rather poorly. Sudan III lightly stained isolated areas of amyloid in artery walls.

The deposits of amyloid in the heart muscle (Fig. 3) were of the greatest interest. There were frequent, fairly discrete foci of involvement of small size, so that in any low-power microscopic field one might expect to see about three such areas. The amyloid deposits were obviously immediately outside of the endothelial lining of the capillaries, especially in areas adjacent to arterioles. As the number of capillaries involved and the amount of amyloid deposits were increased in a given focus, there was a gradual atrophy of the muscle fibers in the center of the area to the degree of complete disappearance. This occurred as the result of interference with blood supply to the muscle. Occasionally small arterioles in the interstitial tissues had rather extensive deposits of amyloid in their walls with considerable reduction in the size of their lumina. Both types of deposit undoubtedly contributed to the injury of the

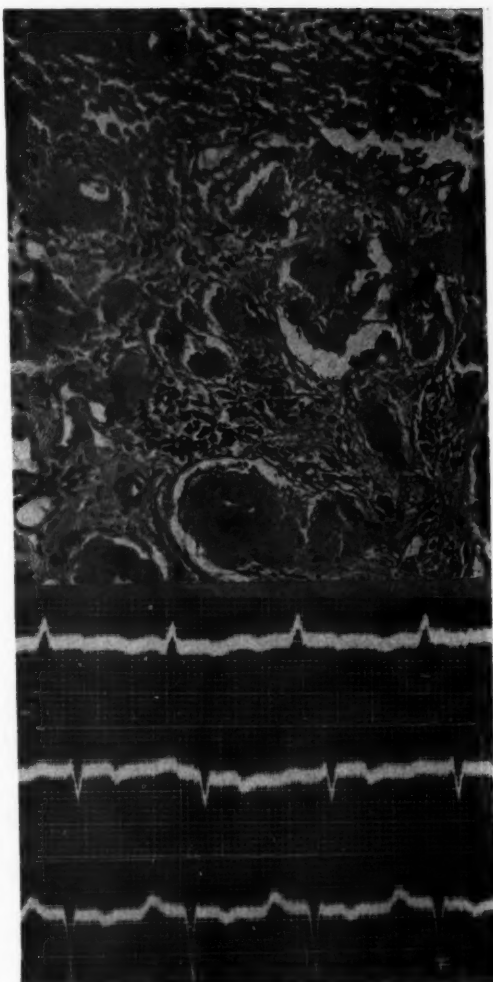


Fig. 1. Hyaline-like deposits in the submucosa of the appendix.

Fig. 2. Leads 1, 2 and 3 of the electrocardiogram.

heart muscle. However, in this particular case the deposits about the capillary endothelium were the principal cause of the congestive heart failure. In the lungs (Fig. 4), there was an extensive amyloid deposit in patchy foci of alveolar walls. These areas were frequently associated with more extensive amyloid deposits in both arteries and veins of small size.

The evidences of chronic congestive heart failure found at the necropsy were those of general anasarca with bilateral hydrothorax, ascites and peripheral edema, chronic passive congestion of lungs, liver, spleen, small mural thrombi in both auricula, small recent hemorrhagic infarcts in the right lung and dilatation of the four cardiac cavities. The heart weighed 320 grams.

Dr. Hirschboeck, will you kindly tell us what led you to the proper diagnosis? We would appreciate any comments on the subject which you wish to make.

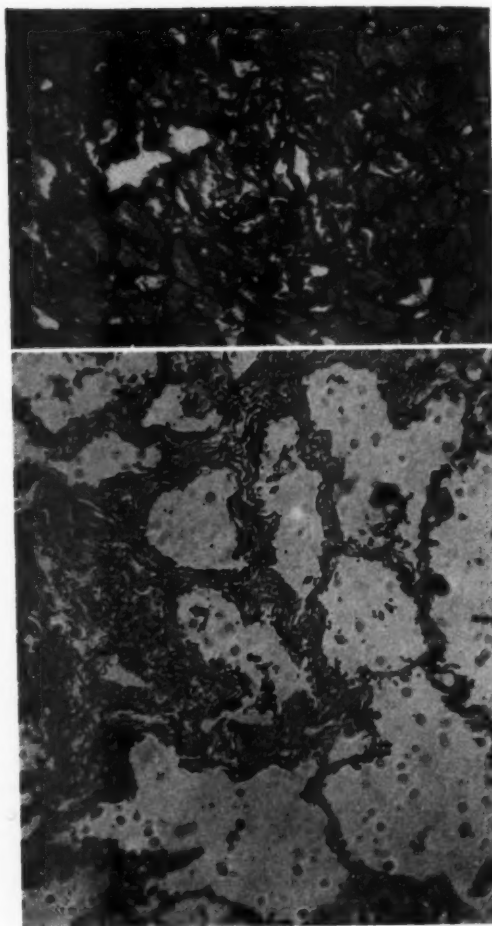


Fig. 3. A small focus of periendothelial amyloid deposit revealing atrophy of cardiac muscle near the center.

Fig. 4. The margin of a focus of amyloid deposit in alveolar walls.

Discussion

DR. F. J. HIRSCHBOECK: The histologic description of the excised appendix with its extensive hyaline-like deposits in blood-vessel walls and in connective tissue associated with large plasma-like cells were a "dead give away."

Amyloidosis has been divided into four fairly distinct types. The first and most common of these is secondary amyloidosis. It is generally associated with chronic suppurative processes, notably chronic ulcerative tuberculosis of the lungs, osteomyelitis and chronic inflammatory disease in any part of the body. Chronic pyelonephritis, bronchiectasis, rheumatoid arthritis and abscesses in almost any tissue of the body as well as malignant processes in various locations have been described as the associated etiologic factor. The deposits

of this type of amyloidosis are found primarily in the spleen, liver, kidneys and adrenals. The second type, primary amyloidosis, is not associated with any disease or known etiologic factor. There were only twenty-four cases in the literature as late as 1939 as reviewed by Koletsky and Stecher.¹⁸ Here the deposits of amyloid are frequently completely absent in the liver, spleen and kidney, but are found in the mesodermal tissues, notably in the smooth muscle bundles of the gastro-intestinal tract, the walls of blood vessels, striated muscle such as the heart, tongue and other voluntary muscles, bone, skin, nerves, joints and tendons. The amyloidosis occurring with multiple myeloma is a third group. This type closely resembles that of primary amyloidosis in its distribution. The fourth type takes the form of isolated tumor masses of amyloid occurring most frequently in the tongue, larynx, eye, bladder and bone. It is rare and generally occurs in association with multiple myeloma or may be of unknown etiology.

DR. V. KRUEGER: What is multiple myeloma?

DR. A. H. WELLS: My personal opinion of multiple myeloma is that it is a malignant process closely related to the other malignancies of bone marrow and lymphatic elements. It may have its origin from lymphocytes, erythroblasts or myeloblasts. It represents a more solid and fixed type of malignancy as compared to the leukemias. However, the myeloma cells may rarely occur in the peripheral blood in large numbers. Small clusters of the myeloma cells were found particularly along the intestinal tract in our present case. Ordinarily, however, the cells are limited to the bone marrow.

The diagnosis of amyloidosis should be suspected in those cases with a tuberculosis or other chronic suppurative process in which the liver becomes considerably swollen, the spleen enlarged and in which albumin appears in the urine in repeated tests. Under these circumstances Vennhold's congo red test^{13,33} with an absorption of 90 per cent or more of the dye from the blood within one-half hour amounts to confirmatory evidence of amyloidosis. In many such cases a punch biopsy of the liver will give absolute evidence of amyloidosis.

The kidneys, adrenals, liver, and the intestinal tract may have their physiologic functions considerably altered by the deposits of amyloid. Deaths from uremia as the result of amyloidosis of the kidneys of tuberculous patients is rather common. The approximately chronologic order of appearance of manifestations of amyloidosis of the kidney are albuminuria, excretion of urinary casts, disturbances of renal concentrating power, lowering of serum proteins, reversal of albumin-globulin ratio, edema and retention of waste products of metabolism.² Interference with the functions of the adrenal glands^{3,24,32} even to the point of development of Addison's crisis have been described in connection with amyloidosis of the adrenals. There may be an extensive involvement of the liver^{31,36} so that the various liver function tests may be indicated for diagnostic and prognostic purposes in certain instances. An involvement of the blood vessels and alveolar walls of the lungs

may seriously interfere with its function.²⁷ An extensive involvement of the intestine may cause almost any possible combination of symptoms, as a result of a disease process, in this tract, including: diarrhea, constipation, nausea, vomiting, meteorism, colicky pains, melena and vomiting of blood.

The exact nature^{14,15,28,29} of amyloidosis in any of its four types is not known. By some it is considered a protein-containing product which is derived from the blood and deposited in the locations. By others it is considered a degenerative product formed primarily by connective tissues. Research on the chemical nature of the substance is in its infancy. It is generally agreed that there is not only some difference between the amyloid of the secondary and the primary types but also there may be some difference even in the same individual at different times and in various locations at any one time. Amyloidosis has been experimentally developed in a variety of animals and is frequently found in horses, used for commercial antiserum production. It is readily formed in mice by the injection of tuberculin. Rabbits receiving repeated sodium caseinate injections will develop amyloid in their tissues.²⁰ It will be noted that in multiple myeloma there may be a relationship between the hyperglobinemia and the frequent amyloidosis. In amyloidosis secondary to suppuration there is rarely any increase in the serum proteins. There is, on the other hand, a prolonged antigen antibody type of reaction present with the possible production of unusual amounts and kinds of proteins. It has been estimated to require a minimum of nine months' time for the development of amyloidosis sufficient to give a positive congo red test.¹³ Cases have been described^{21,25,36,37} in which the associated disease was cured and the amyloid deposits slowly reabsorbed.

In a review of the literature Kerwin¹⁷ found five cases and added two of his own in which amyloidosis of the heart led to heart failure. Cardiac amyloidosis may be classified into those in which amyloid was found in many other organs besides the heart; those in which the heart was involved with a few more rarely affected tissues, and a third group in which muscle systems are the principal sites of the deposits. The amyloid may be deposited in the artery walls and in the interstitial tissues of the myocardium.^{5,19,34} Spain and Barrett³⁰ concluded that the obliteration of lumina of the arteries was the cause of the congestive heart failure. In our present case the interstitial deposits about capillaries was undoubtedly of equal or greater importance than the constriction of arteries. Extensive amyloid accumulation in the cardiac valves has been described¹⁸ in the primary and multiple myeloma forms of amyloidosis. Pericardial and endocardial surfaces may be studded with nodules of amyloid while in other cases of myocardial amyloidosis the two surfaces remain normal. I have been unable to find a clear cut case of right heart failure (cor pulmonale) as the result of interference with pulmonary circulation by amyloidosis of the lungs.

Anatomical Diagnosis: Multiple myeloma; widespread mesodermal amyloidosis; severe cardiac amyloidosis; chronic congestive heart failure.

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◆ HISTORY OF MEDICINE IN MINNESOTA ◆

NOTES ON THE HISTORY OF MEDICINE IN HOUSTON COUNTY PRIOR TO 1900

By **NORA H. GUTHREY†**
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(Continued from the October Issue)

Otto Ferdinand Fischer was born at Le Sueur, Minnesota, on August 21, 1872, the eldest child of The Reverend and Mrs. Ferdinand Fischer. The second son was Arthur, the two daughters, Martha and Laura.

Ferdinand Fischer, the father, was born at Havelberg, Germany, and was well educated in the Prussian schools. When he was eighteen years of age, he came to the United States, traveled at once to Minnesota, took a claim near Rice Lake, and as soon as possible became a naturalized American citizen. While still a very young man, he entered earnestly into the work of the Methodist Church, soon afterward was licensed to preach, and thereafter devoted himself to the ministry. He was a lifelong member of the Northwest German Conference. During the early years he was a circuit rider, later he served as resident pastor in different towns; at the time of the birth of his son, Otto, he held the pulpit of the Methodist Church in Le Sueur. His wife, Lina Uhl Fischer, was born in Wuerttemberg, City of Rottweil, Germany, the daughter of Dr. Matthew Uhl. Sometime in the fifties, in search of greater freedom, Dr. Uhl brought his family to America, when Lina was fourteen years old; they first lived in New York and later in La Crosse, Wisconsin.

Owing to the fact that his father was an itinerant minister, Otto Ferdinand Fischer received his early education in the public schools of various Minnesota towns. After his graduation from the state high school at Northfield as valedictorian, in 1893, he entered the Medical School of the University of Minnesota, from which he received his degree of Doctor of Medicine in 1897. His license to practice medicine in Minnesota had been issued on June 9, 1896, so that he might serve his internship while completing work toward his degree, and he accordingly was on duty in the Asbury Methodist Hospital from November 10, 1896, to April 1, 1897. Thereafter for a term he served as assistant physician on the medical service of the Quincy Mining Company at Hancock, Lake Superior, Michigan; he was licensed to practice in Michigan in 1900. It is of interest that his brother, Dr. Arthur F. Fischer, who settled in Hancock, became chief medical officer of the Quincy Mining Company and well known in the state for his work in the interest of public health, particularly against tuberculosis. He died at Hancock on May 17, 1935.

In 1898 Dr. Otto F. Fischer began his long and honorable career as citizen and physician in Houston County, for a few months in Caledonia, for twenty-eight years in Houston. A man of religious faith and of a well-developed

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sense of social obligation, early in life he joined the Methodist Church, of which he remained a steadfast member and in which he served in various capacities. He always was ready to assist the pastor, either in a large enterprise such as working for a new church or parsonage, or in the lesser details of administration. One of his distinguishing characteristics was his sympathetic interest in young people. For many years he taught the Young People's Bible Class of the Money Creek Sunday School, giving careful thought to the instruction and to the weekly recreational program of the students; he was active in the Epworth League also and was a member of the Epworth League Institute Commission. As a natural expression of his interest in the youth of the public schools, he served on the school board in the Houston district for nearly fifteen years, as president of the board during many of them. Nor was he less interested in matters of public welfare and, when time permitted, in social gatherings of the community. In the earlier years he took part in musical organizations and enjoyed horseback riding and tennis. His business ability, evidenced in all his undertakings, was much respected. For many years, until his death, he was one of the directors of the Houston State Bank. He owned "Elm Court" and his home in Houston.

Dr. Fischer never married. From his sisters and from old friends have come recollections of his selfless devotion to his profession and to his patients; the long drives by day and night through rain and snow, over muddy and even flooded roads; the long periods without sleep. Only once, during an epidemic of influenza, did he employ a driver so that he might catch a few moments of rest between calls. His horses and, later, his trusty Ford, were well cared for; there never was delay in answering calls. A common occurrence in the household was the sound of the telephone in the night and the quiet answer of the doctor, "I'll come at once," and shortly afterward the departing sound of hoofbeats or of the car.

It followed naturally that this physician should be representative in matters of public health and sanitation and that he should long serve as a member of the board of health and as local health officer. And in the field of medical organization, by his able and faithful work he distinguished both the societies with which he was affiliated and himself. Much of the success of the Houston County Medical Society and of the Houston-Fillmore County Medical Society, after the merger of the two county groups in 1904, was owing to his loyalty and wisdom as secretary for twenty years; he was the only member to give the organization such continued devotion. As one of his confreres in Houston County has said, "If this splendid man's history is at all complete, there should be much regarding the county society in it." Dr. Fischer was likewise a strong supporting member of the Southern Minnesota Medical Association, the Minnesota State Medical Association and the American Medical Association.

Dr. Otto Ferdinand Fischer died suddenly at his home on October 11, 1926, from angina pectoris. Greatly loved and honored as he was, personal and official tributes were paid him by school children, friends, patients and associates, by the press, the local board of education and by the Houston-Fillmore Medical Society, the members of which were present as a group at the funeral services, and by the Minnesota State Medical Association. Perhaps none of the expressions of appreciation more truly evaluated the qualities of mind and heart which animated him and made him loved and honored than the following excerpt from a letter written to his sisters by an old friend of the family in Houston:

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Your brother was so sincere and trustworthy, so sane in his judgment, that we have lost a great deal too. He was always comforting and encouraging as a physician, he always made the sickroom seem a hopeful place. The older one gets, the more one appreciates the few outstanding ones who are utterly trustworthy. . . .

After his death a little newspaper clipping was found in Dr. Fischer's notebook: "A real man is not known by what he can get out of his work but what he can put into it; and that his profit be not at the loss of another, he will take great pains to 'give good measure, pressed down, and shaken together!'"

Dr. Fischer was survived by his two sisters, Miss Martha A. Fischer and Miss Laura C. Fischer, teachers, who in 1941 were living in Sioux City, Iowa.

H. T. Fox, the first resident physician in the township of La Crescent, came to the village of this name in 1856 from Lexington, Kentucky, perhaps as a member of The Kentucky Company that was promoting the ambitious settlement, certainly because of it. During the Civil War Dr. Fox served as a military surgeon, it has been said, and after the war he resumed his residence in La Crescent and practiced medicine there until his death in 1875.

W. W. Freeman, who was practicing medicine in Houston County by 1883 and probably some years earlier, has been recorded as a graduate of Dartmouth College and as having received his degree in medicine from the University of Pennsylvania in 1877. His license to practice in Minnesota was issued in December, 1883, under the "Diploma Law." After fifteen years in Caledonia he sold his practice, in 1898, to Dr. De Costa Rhines, then in Houston, and removed to Grand Meadow, Mower County, where he established himself in practice. When the Mower County Medical Society was founded at Austin on October 3, 1902, Dr. Freeman was one of the physicians present. It is worthy of note that during most of the years that Dr. Freeman was in Houston County, there is evidence indicating that another Dr. W. W. Freeman, also a licentiate of 1883, was in Anoka County, and it is of possible interest that in 1906 there was living in Eads, Colorado, Dr. Willard W. Freeman, who was born in 1839 and who was licensed in 1906 to practice in Colorado.

Albert C. Gates, a member of the regular school of medicine, was a contemporary of Dr. G. J. Sheldon, of Mound Prairie, for at least part of the period between 1853 and 1880, the term of Dr. Sheldon's residence in Houston County. A resident of Caledonia, Dr. Gates early in 1883 was serving as county health officer. On November 26, 1883, under the act to regulate medical practice, he received state exemption certificate No. 416-3.

George L. Gates, son of Grose and Phebe Bolles Gates, was born on December 4, 1837, at Harwington, Litchfield County, New York. When George Gates was a young boy, the family moved to Cortland, New York, and it was in the public schools and at Cortland Academy that he received his academic education and some instruction in premedical subjects. In 1855 the family came to Winona County, Minnesota, where they made their new home on a farm in Saratoga Township. George remained at home until the outbreak of the Civil War when, on September 28, 1861, he enlisted and was mustered into service as a private in Company A of the Second Minnesota Regiment of Volunteer Infantry. He served for three years with the Army of the Cumber-

land in Tennessee, Georgia and Kentucky and was discharged honorably and mustered out on September 27, 1864. During his last three months in the army, his interest in medicine and his ambition to become a physician had been renewed by his service with an ambulance corps; consequently, although he returned home after his discharge to spend a few more years on the farm in Winona County, as soon as possible he entered the Medical School of the University of Pennsylvania, from which he was graduated in 1869.

Dr. Gates first practiced medicine in Cortland, New York, with his cousin, Dr. H. A. Bolles, until 1872. In that year he returned to Minnesota, to settle in Caledonia, Houston County, where he followed his profession for eight years and where for six years, beginning in 1874, he was county coroner. In 1880 he returned to Winona County, to the village of Winona, where he remained, practicing after 1883 under state exemption certificate No. 574-3. In 1892 and for a time thereafter he was a member of the local United States pension examining board. He was a Republican, a Mason, a Knights Templar, a Shriner, and a member of the John Ball Post, No. 115, of the G. A. R. Club. An excellent physician and a progressive member of the medical profession, he identified himself with the medical association of county, state and nation.

Stewart V. Groesbeck was born on September 23, 1841, at Otselic, Chenango County, New York. When he was seven years of age, the family moved to Wisconsin and it presumably was in that state that he received his early education and perhaps studied medicine under a preceptor, for record is not known of his having been graduated from a medical college. That he was of the eclectic school of thought is known, because he was a member of the old Minnesota State Eclectic Medical Society that was founded on May 26, 1869, at Owatonna, in Steele County. Soon after the outbreak of the Civil War, S. V. Groesbeck, not yet a physician, enlisted on September 23, 1861, in Company F of the Eighth Wisconsin Regiment of Infantry; he twice was wounded in service, and was discharged from the army in November, 1864, after which he returned to Wisconsin and probably to his study of medicine. It has been stated that Dr. Groesbeck was in Houston County a year and a half in the period of 1864 and 1865 in association with Dr. Bowen, and it has been recalled that he was in High Forest, Olmsted County, from about 1868 to 1872. In High Forest he is remembered as a man of medium size and coloring who wore a mustache, who was kindly, jovial and well liked. Practicing as he did in a period when typhoid fever was common, it is remembered of him also that in all cases of illness he assumed the presence of the disease until it was disproved.

From High Forest Dr. Groesbeck went to Marshall, Minnesota, where he became a citizen of some prominence in fraternal, civic and medical affairs. By 1887 he was in the Territory of Dakota at Watertown, Codington County, and there on June 11, 1887, he took an examination for a license to practice medicine in the territory and on the following June 23 received his certificate. By 1906 he was a resident of Spearfish, South Dakota. He became surgeon to the National Home for Disabled Volunteer Soldiers at Hot Springs, South Dakota, and it was there that he died on December 31, 1908. During his later years he had been elected to membership in the American Medical Association.

Although **E. W. Hammes**, born at Milwaukee, Wisconsin, a graduate of Rush Medical College in 1879, was mentioned in the records of Houston County

of 1882, evidence has not appeared of his residing in that county. On October 11, 1883, Dr. E. W. Hammes, then in New Trier, Dakota County, received state certificate No. 9 (R), and in the communities of New Trier and Hampton he practiced for the succeeding forty-six years with the exception of a few years spent in Winona in the middle eighties. His death occurred on October 3, 1934, at St. Joseph's Hospital, St. Paul. He was survived by his widow, the former Miss Anna Schmidt, of Rollingstone, Minnesota, and three children: Dr. E. M. Hammes, Miss Theresa Hammes and Mrs. Albert Muellerleile, all of St. Paul.

—Hill was said to have practiced medicine in Houston County, presumably in the earlier period of its history.

Edward L. Hills, of Hennepin County, under the Medical Act of 1887 was licensed, on July 10, 1891, to practice in Minnesota, and his certificate was filed in Houston County three weeks later, on July 30. In 1896 a Dr. E. L. Hills, a graduate of Rush Medical College in 1879, was practicing medicine in Minneapolis. Whether Dr. Hills ever actually resided in Houston County has not been determined; there is record that on June 21, 1906, he filed his license in Fillmore County also.

F. B. Hinkley, born in Licking County, Ohio, came to Minnesota in 1865 and by 1874, and obviously earlier, was in Sheldon Township, Houston County; "Physician and surgeon, Harvest Bitters Manufactory," so it was recorded in the "Illustrated Historical Atlas of Minnesota," of 1874.

William W. Holden was born in Saratoga County, New York, on May 15, 1853, and until he was nineteen years of age he lived on a farm and acquired his preliminary education in local schools. In 1873 he entered the Medical College of Keokuk, in Iowa, and for two years, until he was graduated in 1875, it has been said, he earned his way by working in a drug store. On May 30, 1874, he was married to Hattie Wilcox; in 1877 Dr. and Mrs. Holden with their daughter, Zella, settled in Hokah, where the doctor built up a large medical practice.

There is an obvious discrepancy in official records relating to Dr. Holden's medical qualifications. In the records of Houston County it appears that he was graduated from a medical college in Keokuk in 1881 and that his certificate to practice in Minnesota was issued on December 26, 1883, and was recorded on December 28, 1883. In the Official Register of Physicians of Minnesota (1883-1890) William W. Holden, of Hokah, is listed as a graduate of the "College of P. and S., Keokuk, Iowa, 1887" (in a later issue the year was given as 1881), whose Minnesota state certificate No. 403 (R) was issued on November 26, 1883. There is agreement, however, in historical accounts, that he began to practice medicine in Hokah Township, from the village of Hokah, in 1877, and that he remained there at least through 1885. It was in 1881, and probably earlier, that he served as health officer for the adjoining township of Union; in 1882 he became health officer for Hokah Township also.

In a news item of March 17, 1899, in the *Rochester Post* it was stated that Dr. W. W. Holden (then of Amboy, Blue Earth County) had brought his son, Charles, to Rochester for "removal of a bullet, accidentally fired into his brain"

two days previously; x-ray examination revealed the bullet, which was removed successfully. Some time subsequent to this period Dr. Holden removed to Winnebago City, Faribault County, where, as late as 1909, he was practicing medicine, according to the official state register of physicians of 1883-1909.

Truman R. Humphrey was born on December 3, 1813, at Richmond, Vermont. Educated in Medicine at Boston, he at first practiced medicine in Stoughton, Massachusetts. Later, in 1858 or 1859, he went to La Crosse, Wisconsin, and in 1859 crossed the Mississippi River into Houston County and homesteaded near the village of Hokah. In 1864 he removed to Brown County, where he took up a claim near Sleepy Eye on which he lived with his family until 1897, when he established the family home in Sleepy Eye. Throughout this period he practiced his profession and was influential in the social and economic development of the community. From 1887 to 1892 he served as county coroner. A highly respected citizen and physician; he died in Sleepy Eye on October 11, 1907.

Charles Jenks, the first medical practitioner in Hokah, in 1856, began his professional career while he was still a student, carrying on practice between courses at medical school. Unfortunately, a record has not been discovered as to what school he attended or under what preceptor he may have studied. He and Dr. Train were the physicians in Hokah when the village was at the height of its early and remarkable prosperity.

Thore Erlemoen Jensen, the son of Mr. and Mrs. Jens Jorgensen, who were farmers, was born at Tolgen, Norway, on March 5, 1840. Jens Jorgensen was born at Vingelen, Norway, and his wife, Marit Jonsen Jorgensen, at Tolgen. When their son Thore was thirteen years old Mr. and Mrs. Jorgensen brought him and their three other children, George, Ingeborg and Kjerstine, to America. With their young family and very slender financial resources they arrived in Spring Grove Township, Houston County, in 1853 and at once secured a tract of wild government land near the settlement of Spring Grove, and here they built their first home, a small log house.

Thore had attended elementary school in Norway. A natural student and determined to learn, he continued his education in Houston County whenever work on the pioneer farm permitted, reading as much as possible, especially on scientific subjects. In 1863, then in his early twenties, he was appointed postmaster of Spring Grove. Although much earlier he had chosen medicine as his profession, nearly a decade was to elapse before he entered the Eclectic Medical Institute at Cincinnati for his formal medical training. After his graduation, on January 27, 1874, Dr. Jensen returned to Spring Grove, where he built up the heavy medical practice that lasted without intermission for nearly forty years. Much of the time he was the only practicing physician in the locality, and his territory extended to Houston on the north and to Decorah, Iowa, on the south. After November 24, 1883, he practiced under state certificate No. 377 (E).

On October 10, 1875, Thore E. Jensen was married to Ingeborg Onsgard. As the exigencies of medical practice would have it, care of the sick came before personal plans, and on this day he was called into the country to perform an emergency amputation of an arm; the patient, a pioneer farmer, was living in 1940 and enjoyed telling of the surgical operation that postponed the doctor's wedding. Ingeborg Onsgard was born at Ness Hallingdahl, Norway, on

November 3, 1853. When she was seven years old, she came with her parents, Knute and Bergit Onsgard, to Houston County, and she proved to be a true pioneer daughter, helping in all parts of the work on the homestead, even driving oxen while her father held the breaking plow.

Dr. and Mrs. Jensen had three children, a son, James, and two daughters, Inga Theoline and Bergette Mathilda. The home life of parents and children was ideal and all the dearer to Dr. Jensen because his professional work required frequent absences from the family circle. Often he would be away for days at a time on a round of professional calls and in his absence patients who came to see him at his home waited there for him, often overnight. Mrs. Jensen's role as the wife of a physician was not an easy one in those years; it was usual for her children when they returned from school to find her ministering to the sick.

Dr. Jensen's experiences in the earlier years of his practice were those of pioneer physicians throughout the new land, full of hazard and responsibility, but with relieving high lights of humor. Forgetful of himself, fortunately of sturdy health, he hastened to all patients in need of him, surmounting dangers of roads and weather. One dark night of torrential rain he was attempting to make such speed that he failed to stop his horses when he noticed a man waving a lantern. In a moment he and the team were plunged into a flood where he had expected to find a bridge. By holding onto the reins he was able to struggle across. The next day, in describing his escape, he remarked: "I never knew before that I could swim." On one occasion in the home of a patient when he was asked to baptize a dying child and when he discovered that there was no water in the house, he resourcefully looked about and used coffee that remained in a pot on the table.

At the beginning of his medical practice Dr. Jensen owned and operated a drug store and had his offices in the upstairs rooms. His medical and surgical work soon required his entire attention, however, and after a few years he sold his interest in the store to his partner, Elling Reiersen. In a later period, after 1900, for a few years he assisted Dr. W. E. Browning at the Caledonia Hospital.

In his devotion to his profession Dr. Jensen used his influence to persuade young men of ability to study medicine, among them Mrs. Jensen's two brothers, Lewis K. Onsgard and Christen K. Onsgard, and in due time his own son, James, and urged on them the importance of keeping abreast of medical advance by reading the best of medical books and current medical journals. A scholarly man, follower of his own advice, he possessed a fine library of religious works, medical books and publications and in his desire to increase his knowledge and efficiency, he studied constantly and traveled whenever possible. In 1890 he took a course at the New York Postgraduate School. Among his valued personal possessions were group photographs of his teachers and his fellow students, both in Cincinnati and in New York, and in the picture taken at the postgraduate school there appears with Dr. Jensen his classmate from Olmstead County, Dr. Charles H. Mayo. Dr. Jensen was a member of the Alumni Association of the Eclectic Institute, and he was one of the men responsible for the success of the Houston-Fillmore County Medical Society. On one occasion, when the members of this county group met in convention at Spring Grove, as a surprise he entertained them at dinner, a bountiful feast beautifully appointed.

It is understandable that a man of Dr. Jensen's sensitive intelligence should

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be a devout Christian who gave liberally to the Lutheran Church, of which he was a member, and to the colleges maintained by the church, and that his hobbies were fine music and beautiful flowers. Near the large and comfortable family home his carefully landscaped flower garden of many beds of different sizes and shapes was throughout the season a mass of gorgeous color, a source of pleasure to his family and to members of the community, who still recall the sight.

To his patients and their families Dr. Jensen was not only the skilled surgeon and physician, and he achieved an enviable reputation as a diagnostician, but also the friend, of keen and kindly humor, radiating sympathy. Although in his later years he long was in failing health, he continued his active practice until 1911, but even after his retirement many would not give him up as their physician and would come long distances to consult him at his residence. The news of his death on April 3, 1915, brought a sense of loss to hundreds of homes.

Thore Erlemoen Jensen was survived by his wife and children. His son, Dr. James C. Jensen, of Hendricks, Minnesota, a graduate of Luther College, Decorah, Iowa, in 1899 and of the University of Minnesota in 1903, died on October 22, 1928. Mrs. Jensen and the two daughters, Inga Theoline and Bergette Mathida (Mrs. Nels Kjome) in 1940 were living in Spring Grove.

Henry Porter Johnson, the sixth of nine children, the son of David and Almira Corey Johnson (who respectively were from New Hampshire and Massachusetts and of English and Scotch-English parents) was born on February 3, 1855, near Oshkosh, Winnebago County, Wisconsin. The family removed in June, 1855, to the settlement of Pleasant Hill, Fremont Township, in Winona County, Minnesota, where they lived on a farm. Henry Johnson's early education was received in the public schools of Houston County and in the high school and the State Normal School at Winona. After teaching two terms of school he entered Rush Medical College in Chicago and in 1879 was graduated.

Dr. Johnson first practiced medicine in Hancock, Minnesota, until 1882, when he went to the village of Houston, in Houston County, where he remained ten years. After November 12, 1883, he held Minnesota license No. 316 (R). He was coroner of the county four years, beginning in 1883, and again in 1891 and 1892. For four years after leaving Houston, in 1892, he was in La Crosse, Wisconsin, developing a large practice, which he gave up in 1896, preferring to return to a quieter life in a smaller place, in Long Prairie, Minnesota.

In 1899 Dr. Johnson moved to Fairmont, Martin County, which became his permanent home and the scene of a continuously active and useful life, in social, civic and professional affairs. At one time affiliated with the Episcopal Church, he later joined the Methodist Church. He was a Republican, a Mason, a member of the Kiwanis Club; he served as a member and as president of the school board, vice president and director of the Citizen's National Bank and president of the local board of health for many years. For a time, in Fairmont, Dr. Johnson was associated in practice with his brother, E. B. Johnston (both spellings of the surname are correct), but otherwise he practiced alone until his son, Dr. Donald W. Johnson, joined him. For several years he owned and operated the Johnson Hospital at Fairmont.

(To be continued in the December Issue)

President's Letter

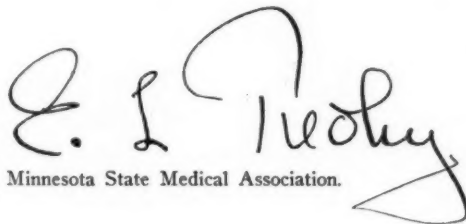
THE HERSHEY CONFERENCE ON "MEDICINE AND THE NEUROSES"

The timely report on the Hershey conference* is available and should be read widely by everyone interested in the medical drift of our times. W. A. O'Brien, our distinguished director of graduate medical education at the University of Minnesota, is arranging a course covering the various phases of psychosomatic medicine, and particularly the anxiety neuroses at the Center for Continuation Study. Distinguished teachers in this borderline field between internal medicine and neuropsychiatry are to be invited to Minnesota to help introduce this presently vital field of medical endeavor. A large attendance is urged.

The Hershey, Pennsylvania, meeting was called primarily to discuss the rehabilitation problems arising from the high incidence of nervous disorders among military recruits. However, the report made by this group of neuropsychiatrists, mental hygienists and internists is applicable to many of the diagnostic and therapeutic problems we have all battled with in the past decade. Whether in the military forces or facing the conflicts of civil life, many otherwise useful and efficient citizens demonstrate in full force the somatic or regional symptom outcroppings that arise where the individual is unable to resolve the static within his conflicted consciousness.

These issues must be faced without deviation or "buck passing." Only one other medical problem exceeds in extent and complexity this issue: it is that of age—what to do with, and for, those past the prime of life heading into possible cancer and cardiovascular decline. The neuroses may irritate us and clog up all our facilities (clinics and hospitals) with their somatic wailings; but they do not die on our hands, and most of them pay for and appreciate our help, i. e., if we do not accept their own dire verdicts and order the surgical removal of any dispensable organ emitting a somatic squeak. No especial surgical salesmanship is needed to effect a deal. The individual is so unhappy and perturbed with the thought of self-preservation that an operation is grabbed at even as a person catapulted into the water appreciates a life preserver. You will find among many other items of the brochure these thought-provoking passages:

1. "It can be presented effectively in three weeks with appropriate material." You see, it isn't going to be as simple as acquiring penicillin technique.
2. Speaking of what small-town doctors read: "The little commercial journals put out by pharmaceutical houses . . . are much more widely read than the *Journal of the American Medical Association*." (To Dr. Fishbein and other gifted editors, a timely "Ouch!")
3. As to the unsettled Veteran: "We are convinced that the Veteran is going to be treated by the general medical group of America. . . ." That means out in the hamlets as well as the metropolitan areas.
4. And this for politically placed Veterans' Hospital Extensions: "The psychoneurotic Veteran, generally speaking, is *not* in need of hospitalization, and in most instances would be injured rather than helped by bed rest." From the two world wars and a few from the Spanish-American war we have in Minnesota 418,000 military veterans. I hope many readers will send for the Hershey pamphlet.



President, Minnesota State Medical Association.

*The National Committee for Mental Hygiene, Inc., 1790 Broadway, New York 19, N. Y.

Editorial

CARL B. DRAKE, M.D., *Editor*; GEORGE EARL, M.D., HENRY L. ULRICH, M.D., *Associate Editors*

METHIONINE IN TOXIC HEPATITIS

THE protective value to the liver of a high carbohydrate diet has long been recognized. The equal importance of plenty of protein in the diet in affording protection to the liver against toxic substances such as chloroform, carbon tetrachloride and trinitrotoluene has only recently been stressed.

It has been shown repeatedly that well-fed dogs can tolerate an hour of chloroform anesthesia without evidence of liver injury. On the other hand, dogs starved for three days show marked hyaline central necrosis of the liver lobules, an increase of bile pigment in the blood and urine, and occasionally die in two to four days following the same period of chloroform anesthesia. Further, if dogs that have fasted for three days are given a full meal several hours before being subjected to chloroform anesthesia, they will not show evidence of liver injury. Miller, Ross and Whipple⁵ have also found that protein depleted dogs, if given a few grams of the amino acid methionine twenty-four to four hours before chloroform anesthesia, will tolerate forty minutes of anesthesia without showing evidence of frank intoxication or signs of liver injury.

Methionine and cystine are the two sulphur-containing amino acids. However, cystine alone will not exert this protective action, but, combined with choline, does. This fact has led Georgy⁴ to suggest that perhaps cystine and choline produce a third substance in the liver, possibly methionine. The explanation of the protective action of methionine for the liver may well lie in the detoxifying action of the sulphur radical of this amino acid.

The observation that methionine given as late as four hours following the administration of chloroform anesthesia to protein depleted dogs will prevent fatality, although it will not prevent some liver injury, has led to its use therapeutically in cases of exposure to the toxic action of chloroform, carbon tetrachloride and trinitrotoluene.

Beattie¹ was the first to use methionine clinically

in the treatment of carbon tetrachloride poisoning. An Air Force pilot swallowed accidentally 30 to 40 c.c. of carbon tetrachloride. Treatment consisted of methionine orally and a papain-pancreatic digest of casein to which methionine was added, intravenously. Recovery was prompt. The case report which appeared in the *British Medical Journal* of February 12, 1944, was considered to be of sufficient importance to be abstracted in an editorial in the *AMA Journal* of March 25, 1944.

Since then Eddy² has reported the treatment of several colored women poisoned by the fumes of carbon tetrachloride, two of them extremely sick with evidence of liver and kidney damage, with high carbohydrate, high protein and low fat diet and methionine in 2 gram doses orally every four hours in most cases, although some received larger doses. All recovered.

Eddy³ has also reported the treatment since July, 1944, of thirty individuals suffering from toxic hepatitis, the most of them caused by trinitrotoluene and ten of them extremely sick, by methionine orally without a fatality. They also received high protein, high carbohydrate, low fat diet, by duodenal tube when necessary. Two patients with epidemic hepatitis also showed striking improvement in forty-eight hours under this treatment.

Casein contains many essential and nonessential amino acids. Casein and egg white are rich in methionine. It is also contained in serum albumen.

Methionine is manufactured by Merck and is available in 1-, 5-, and 10-gm. bottles. Wyeth is putting methionine on the market under the trade name of Meonine.

There are several preparations of amino acids available for intravenous administration. The preparation put out by Stearns, for instance, is a 15 per cent solution of amino acids, 3.25 per cent of them being methionine.

It would seem that methionine, of all the amino acids, has a special detoxifying action against

certain toxins which affect the liver, such as chloroform, carbon tetrachloride and trinitrotoluene. Its detoxifying action in hepatitis may possibly extend to other liver toxins, and may be of value in liver injury due to nutritional factors. The fact, however, should not be overlooked that the liver has a remarkable recuperative capacity if provided with sufficient carbohydrate and protein.

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NEW PREPARATIONS OF PENICILLIN

AMONG the newer preparations of penicillin, that prepared in beeswax for delayed action by intramuscular injection has certain advantages. One injection daily of 1 c.c. of this preparation containing 300,000 units obviates the necessity of hospitalization or frequent professional visits. The wax is difficult but not impossible to administer in that it must be warmed to 113 to 124 degrees F. for liquefaction and must be given in a dry, warm syringe through a large needle promptly. While the cost of about \$6.00 for a 1 c.c. ampoule is considerable, it may prove more economical to the patient.

Tablets of penicillin, 20,000 to 25,000 units per tablet, buffered with a mild alkali to prevent destructive action of gastric juice, have been proven effective for certain of the milder infections. They should be given at least a half hour before eating and at least two hours after a light meal in 40,000 or 50,000 unit doses every two or three hours, day and night. The cost to the patient of 55 cents a tablet is considerable. Gonorrhea is said to respond to such dosage in two or three days. Tablet dosage may also be used for a few days following an initial response to parenteral penicillin in pneumococcic, streptococcic and staphylococcic infections.

It should be emphasized that continuous intravenous or intramuscular injections at three-hour intervals are the preferable methods of treating the more severe infections due to staphylococci,

hemolytic streptococci, pneumococci and meningococci. It is apparently worthless in all Gram-negative bacillary infections such as typhoid, paratyphoid, dysentery, undulant fever and tularemia. It is also ineffective in tuberculosis, acute rheumatic fever, infectious mononucleosis, Hodgkin's disease, leukemia, ulcerative colitis, malaria, poliomyelitis and virus infections.

MORTALITY TRENDS IN THE LAST TWO DECADES

THE Metropolitan Life Insurance Company has recently charted the trends of mortality during the past two decades in white policy holders according to sex,* and they are interesting. To mention a few of the findings which can confidently be taken to reflect the trends in the white population of the country:

There has been a marked decline in mortality during the past two decades, but it is surprising to find that the drop has been 43 per cent among white females and only 26 per cent among white males. This greater improvement among females applies to most of the important causes of death.

Chronic heart disease heads the list as cause of death in both males and females. While there has been a slight increase among males there has been definite decrease among females. Inasmuch, however, as there was no heading of diseases of the coronary arteries and angina pectoris twenty years ago, the figures for this heading greatly increase the number of males dying from heart disease and just about counteract the improvement in females. The mortality for coronary heart disease is about three times as great in males as in females.

Tuberculosis has been reduced to a third in males and to about one fourth in females and for all ages is now about twice the figure for males as females. The same applies to pneumonia. The mortality from chronic nephritis has been halved for both males and females. Cancer has shown an increase from 74.8 to 84.8 per 100,000 in males and a decrease from 88.2 to 82.7 in females, so that it is now equally important in the two sexes.

It is quite surprising that deaths from cerebral hemorrhage have been reduced a good third in both sexes. Interesting, too, is the finding that deaths from diabetes show a slight reduction in males and an increase in females so that now

*Sex differences in mortality trends. Statistical Bulletin, Metropolitan Life Insurance Company, 26:5 (Sept.) 1945.

twice as many females die of diabetes as males. Deaths from typhoid, measles, whooping cough, scarlet fever and diphtheria are now less than 1 per 100,000 in each sex. Deaths from appendicitis have been halved in each sex. The figures for accidents show a reduction of a quarter for males and a third for females, some three and a half as many males as females dying from this cause.

These statistics compare the mortalities of the years 1921-1923 with 1941-1943 and presumably have been little affected by the war. The several factors of better medical care, better public health supervision, public safety campaigns and a better informed public are doubtless responsible for the general reduction in mortality.

THE RESPONSIBILITY OF THE PRIVATE PHYSICIAN IN TUBERCULOSIS CONTROL

The importance of the general practitioner in the control of tuberculosis among private patients is emphasized by the findings of the Public Health Service in chest x-ray surveys conducted among more than a million industrial workers and by the discovery of a relatively high incidence of the disease among rejectees of the armed forces.

Eight mobile x-ray units, operated by the Tuberculosis Control Division of the Public Health Service in various parts of the country, found that three in every 200 persons examined had x-ray evidence of reinfection tuberculosis—active or inactive. Sixty-five per cent of the lesions were in minimal stage, 30 per cent in moderately advanced stage and 5 per cent of the lesions in far-advanced stage. Pre-induction examinations by Selective Service alone revealed 150,000 cases with x-ray evidence of tuberculosis.

That the family physician will be called upon to treat a great majority of these persons is borne out by the experience of the U. S. Public Health Service and of the National Tuberculosis Association and its affiliates. In industrial surveys an overwhelming number of workers who could afford private care designated their family physicians—general practitioners—as the doctors to whom the report of the x-ray findings should be made. When these reports are sent out they are accompanied by a request that the physician confirm or disprove the x-ray findings by further clinical studies—such as history and physical examination, laboratory tests and repeated x-ray examinations. He is also asked to examine contacts and to report the new cases of tuberculosis to the local health department.

The average patient has a great deal of confidence in his private physician and expects him to treat tuberculosis just as he would accept other family medical emergencies. Psychological factors make this desirable and practical considerations make it feasible, especially if the physician possesses sufficiently broad understanding of tuberculosis and modern therapeutic methods. Sanatorium care is no longer the only method of tuberculosis

control. Many minimal lesions and a limited number of inactive advanced lesions are amenable to outpatient supervision under strict medical care. This supervision and care can often be rendered by the alert general practitioner who possesses modern knowledge of the diagnosis and treatment of tuberculosis.

The demand for this type of care is expected to increase rapidly as mass radiography units penetrate all sections of the country, uncovering a large number of unsuspected cases of pulmonary tuberculosis that will need medical supervision—before and after sanatorium care.

The personal experience of actually having a chest x-ray will stimulate thousands of individuals to seek medical care, from general practitioners, chest specialists and radiologists, either for tuberculosis or for other chest conditions found on survey examinations.

Through their vast nationwide educational program, their case-finding and rehabilitation work, which are supported by the sale of Christmas Seals, the National Tuberculosis Association and its affiliated groups will continue to awaken communities to the dangers of the disease. As a result, communities will provide the armamentarium needed for the proper care of the tuberculous patient—hospital beds, clinics, laboratories, rehabilitation service, extensive chest surveys and generous social assistance for the dependents of the tuberculous patient.

The by-product of co-operative plans of public agencies and voluntary associations will provide new aids for the physician in private practice—x-ray, laboratory and consultation services, as well as opportunities for postgraduate training. With these aids he will be better equipped to meet the increasing demands of the tuberculous patient for his services.

As x-ray surveys become an annual routine in many communities, more and more minimal lesions will be found, and, conversely, fewer advanced lesions, which now, in most cases, require immediate sanatorium care. The reversal of the old ratio will shorten and simplify therapy for the larger proportion of tuberculous patients, will assure quicker and more complete treatment, and greatly increase the chance of vocational rehabilitation.

A better distribution and greater expansion of clinic, x-ray field services and laboratory facilities will bring modern diagnostic aids within the reach of every general practitioner in urban or rural areas. New, well-equipped sanatoria, more accessible to population centers, and accredited for residency training, will provide convenient consultation service. Such institutions can be developed to provide postgraduate training of great value to the general practitioner. Research laboratories and demonstrations devoted to the evaluation of old and new therapeutic methods and clinical concepts about tuberculosis have already been established and will be increased in number. From these efforts it is hoped additional aids will be forthcoming for the physician, not only to control but to eradicate the White Plague within a measurable time.

HERMAN E. HILLEBOE, Medical Director
Chief, Tuberculosis Control Division
U. S. Public Health Service

**THE MEDICAL ORGANIZATION AT OAK RIDGE,
TENNESSEE—SITE OF THE ATOMIC
BOMB PROJECT**

For many months members of the profession throughout the Northwest have been hearing about the group of physicians from the Twin Cities who had gone to Oak Ridge, Tennessee, to work on a secret project. There were many rumors as to the work that these physicians were carrying on. Since the secret of Oak Ridge and the atomic bomb has been released, the story of the assignment of these physicians can now be told. The trials and triumphs of this assignment represent a decade of medical effort and practice accomplished in a two-year period.

When the Manhattan Engineer District was organized to carry on the secret investigation and production of the atomic bombs, there arose the necessity of a medical organization to take care of the health requirements of all the personnel connected with the construction, operation and research phases of the project. Colonel Stafford L. Warren, then Professor of Radiology at the University of Rochester, was selected by the War Department as the Director of the Medical Section of the Manhattan District with Lt. Colonel Hymer L. Friedell as his executive officer.

In May of 1943, Dr. Charles E. Rea of Saint Paul, Minnesota, was selected as the Chief of Clinical Services for the Oak Ridge Project and was directed to secure his initial staff at the earliest possible moment. Dr. Rea selected nine other physicians from the Saint Paul and Minneapolis area and one physician from the University of Wisconsin. Most of these men came from teaching positions on the University Hospital staff. The personnel of this initial staff is as follows: Lt. Col. Charles E. Rea, Saint Paul; Major W. C. Bernstein, Saint Paul; Major Asher A. White, Minneapolis; Major Joseph M. Ryan, Saint Paul; Major F. L. Bryant, Minneapolis; Capt. E. George Olsen, Minneapolis; Capt. Albert T. Hays, Minneapolis; Capt. Burtis J. Mears, Saint Paul; Capt. G. E. Knutson, Saint Paul; Capt. L. L. Kallestad, Hutchinson; Capt. W. C. Keetel, Madison, Wisconsin.

The first physicians of this group arrived at Oak Ridge on July 1, 1943, and began to organize the medical facilities for the rapidly growing secret city. Within a few weeks all of the original staff were on the scene busily working in the Medical Service Building which had been erected to house the medical unit until the hospital could be built. In this building all pre-employment examinations for operating personnel were done and here all persons requiring medical care were attended to. Patients who were in need of hospital care were taken to the hospitals in Knoxville, some twenty miles distant. During this initial period Preventive Medicine, Public Health, and Sanitation were responsibilities of this group. Equipment was arriving daily, but many makeshift arrangements were made to do the necessary work without the benefit of adequate help, space or supplies.

The first unit of the Oak Ridge Hospital was completed in November of 1943, and the medical staff then moved to their new offices in the hospital building. The original hospital provided beds for fifty patients and office space for only the already inadequate staff. Plans

were made immediately for additions to the hospital and clinical facilities, and through the months that followed the hospital expanded to three hundred beds. A large clinic building was built adjoining the hospital which provided office space for approximately fifty physicians. An additional building was provided to house the Department of Public Health and Vital Statistics. A large institution had been developed and was already functioning within a period of four or five months where no similar facilities had previously existed. Only through the use of the highest priorities from the Army was it possible to obtain so many people and so much equipment in such a short space of time.

The medical staff of the Oak Ridge Hospital was increased regularly as the population of the area mounted. In the summer of 1943, the population of the area was 25,000 persons and in 1944, the resident population was 75,000. Many more thousands lived off the area but worked in the project. As a result of this rapid expansion of the medical program, special arrangements were made with the Office of the Surgeon General so that additions to the staff could be selected through Army channels.

In addition to the Minnesota physicians listed above, the following Minnesota men were subsequently assigned to the Oak Ridge Hospital: Major V. L. Lindberg, Minneapolis; Capt. William Fleeson, Minneapolis; Capt. J. B. Eneboe, formerly of Minneapolis; Lt. R. A. Johnson, Minneapolis; Lt. W. R. Clarkson, Rochester; Lt. H. C. Dahleen, Rochester; Lt. F. E. Donoghue, Rochester; Lt. E. F. Preston, Rochester; Dr. Erick K. Clarke, Minneapolis.

It was necessary to furnish a high calibre of medical service at Oak Ridge. Many of the scientists and research workers had come from outstanding universities at home and abroad and were in a position to be highly critical of medical procedure. The present staff of the Oak Ridge Hospital consists, for the most part, of highly trained specialists from most of the large clinics and teaching schools in the United States.

A clinic type of service fashioned after that which is in use in many of the prominent clinics has been adopted at Oak Ridge and has proven very satisfactory. The medical facility takes care of the large number of military personnel stationed at Oak Ridge as well as the civilian population. The outpatient department handles as many as 20,000 visits per month while the hospital has discharged as many as 1400 patients per month.

When the Oak Ridge Hospital first began to function, the following persons from the University of Minnesota and the Twin City area were on duty: Dr. William B. Holt, Minneapolis (deceased 1944) Hospital Director; Gertrude Gunn, Minneapolis, Record Office; Lucile Halvorsen, Constance Swan, both from Minneapolis; Evelyn Skooglund, Saint Paul, Operating Rooms; Pearl Lembke, Gladys Thorson, both of Minneapolis, Anesthesia; Mildred Wegener, Mildred Raabe, Edith Young, Zella Hayes, Betty Miller, all of Minneapolis, Nursing; Lila Bengston, Grace Hanson, Virginia Givens, Minneapolis, Public Health; Ellen Newman, St. Paul, Anesthesia.

A prepayment type of medical insurance was worked out after consultation with Dr. Nathan Sinai of the Michigan School of Public Health to which all operat-

ing personnel on the area could subscribe. This plan has worked out very satisfactorily for the hospital and for the subscribers at Oak Ridge. All fees were set up according to the fee schedule prevailing in the nearest center, Knoxville, Tennessee. This insurance plan has been entirely self-sustaining and should prove acceptable to communities of similar size.

Because of the secrecy surrounding the Oak Ridge project and because all procedures were under direct control of Military Security, the medical profession has not had very much information about the medical facilities at Oak Ridge. However, after the Oak Ridge Hospital had been completed and was functioning according to plan, it was visited by officials of the American College of Surgeons and of the American Medical Association. After these investigations, the hospital was fully accredited by the American College of Surgeons and was approved for internships and residencies by the Committee on Education of the American Medical Association.

Minnesota may justly take pride in the part their medical and allied professions have played in making this hospital and clinic one of the outstanding organizations in the country.

WILLIAM C. BERNSTEIN
F. L. BRYANT

CHRISTMAS SEALS

When one considers that the discovery of the tubercle bacillus was first announced to the world on March 14, 1882, by Koch and the fact that there were over 57,000 deaths from tuberculosis in the United States in 1942 and nearly 700 in Minnesota the same year, we realize that the fight against this enemy of man has been long-drawn-out and uphill work. We cannot be too complacent when we learn that the death rate from tuberculosis is one-third what it was twenty years ago.

To learn that tuberculosis is due to an infection was a marvelous discovery. To prevent the infection is still an enormous task and means the detection of those able to spread the infection before the harm is done. Mantoux testing, followed by x-ray of the positive reactors, has proven the best method of detecting early cases of tuberculosis.

There is a tendency on the part of some physicians to minimize the importance of x-ray lung examinations. While it is true that an x-ray examination of the lungs is not the whole story as to the presence or absence of tuberculosis of the lungs, it is the best method for detecting those individuals who should be carefully studied for the presence or absence of active tuberculosis.

The Christmas seal sale each year at this time supports the work of the Minnesota Public Health Association, the main portion of whose activity is fighting tuberculosis. Mass x-ray surveys are coming to be more and more the function of this organization. The sale of Christmas seals needs the support of the profession, as well as the public, if the decline in tuberculosis mortality is to continue to the point of extermination of the disease.

NOVEMBER, 1945

In Memoriam

E. V. BATES

Dr. E. V. Bates, a practicing physician at Browns Valley since 1924, died August 6, 1945, at the age of sixty-two.

Dr. Bates was born in Springfield, Nebraska, October 6, 1882. He attended the University of Nebraska and received his medical degree from Drake University in 1909.

He served in the Medical Corps of the Army from 1917 to 1919 and went with the First Medical Corps to France, where he was cited for bravery and received the Distinguished Service Cross for evacuating wounded under heavy fire.

In 1919 he practiced at Wheaton, Minnesota, and in 1924 moved to Browns Valley where he continued to practice until his health failed.

Dr. Bates was a member of the West Central Minnesota Medical Society, the Minnesota State and American Medical Associations. He served as health officer of Browns Valley and took an active part in civic affairs. He never married.

J. HERBERT BLISS

Word has been received of the death of Dr. J. Herbert Bliss on October 1 in New York; he had been ill for two months. Dr. Bliss was a fellow in surgery and first assistant in radium therapy in the Mayo Foundation from 1923 to 1929.

He was born May 22, 1892, at Clyde, New York. He received the degree of M.D. in 1921 from Columbia University and was an intern at the Methodist Episcopal Hospital in Brooklyn from June, 1921, to October, 1923, at which time he entered the Mayo Foundation as a fellow in surgery. A year later he became first assistant in radium therapy. He left the Mayo Foundation January 1, 1929, to go to Brooklyn where he has since served on the surgical staff of the Methodist Episcopal Hospital.

JOHN STRICKLER SHRADER

Dr. J. S. Shrader of Lamberton, Minnesota, died suddenly on July 5, 1945, at the age of eighty-eight.

Dr. Shrader was born in Clarence, New York, March 9, 1858. He obtained his medical degree from the University of Michigan Medical School in 1885. He first practiced at Hadley, Michigan, but in 1886 he moved to Delano, Minnesota, where he remained until 1901. He then moved to Springfield.

In 1888 Dr. Shrader married Charlotte McDonald of Minneapolis. After his wife's death in 1926, he retired from practice. A few years later, however, he resumed practice at Hollandale and in various other locations, the past three years in Lamberton.

Dr. Shrader is survived by two daughters, Mrs. Stinchfield, Minneapolis, and Mrs. Bauman, New York.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the

Minnesota State Medical Association

George Earl, M.D., Chairman

AMA HOLDS PUBLIC RELATIONS CONFERENCE

On October 19 and 20, a conference on public relations was held at Chicago by the Council on Medical Service and Public Relations of the American Medical Association. This conference, attended by representatives of all state medical societies, included eight round table discussions: one was held on legislation, one on extension of the EMIC program, another on public relations, and one on placement of medical officers. Other round table discussions were heard on prepaid medical insurance plans, at which A. W. Adson, M.D., of Rochester was moderator; also on rural health problems; on activating the 14-Point Program for Medical Care and Veterans' Administration plans.

In addition to Dr. Adson, the Minnesota State Medical Association was represented by President E. L. Tuohy and Mr. R. R. Rosell, Executive Secretary.

The first day was given over to round-table discussions from which emerged several specific recommendations. They were presented as resolutions the following day for acceptance by the general session, presided over by E. J. McCormick, M. D., Toledo, Ohio, Chairman of the Council. These were acted on separately and referred to the Board of Trustees, to be presented to the House of Delegates at its meeting on December 3.

The Section on Prepaid Medical Insurance, as was to be expected, produced much lively discussion. It was decided that it should meet again in Chicago November 29 and 30 to formulate specific plans for the establishment of a voluntary prepaid medical service program on a national basis to be presented to the House of Delegates.

Major General Paul R. Hawley, Medical Director of the Veterans' Administration, addressed

the conference and asked for the co-operation of the medical profession in developing a program for the disabled veteran.

In his opinion every physician of organized medicine should become a physician of the Veterans' Administration on a fee basis. It is his belief, further, that every disabled veteran should have free choice of physician in his home community, and that it should be left to each state association to develop a good medical program to render out-patient service to which veterans are entitled for service-connected disabilities. Medical care for women veterans, Dr. Hawley pointed out, will be broader in scope and will include medical care for both service and non-service connected disabilities.

He is looking for the best men in medicine, he told the conferees, to become permanently associated with the Veterans' Administration. To take charge of the institutional program, the services of Paul B. Magnuson, M. D., of Chicago, have been secured.

It is his opinion that the only cases the Veterans' Administration is going to be able to care for are the "long-stay" patients—the tuberculous and mentally ill and others who will require hospitalization over long periods. All others, he asserted, should receive medical treatment in their home communities from local physicians.

The importance of concerted action aimed at establishing a uniform and progressive national policy designed to meet the present challenge facing the medical profession on the medical economics and public relations front was at the heart of all discussions in Chicago. State leaders spoke in no uncertain terms their conviction that something must be done and undoubtedly, much was accomplished to pave the way for decisive action when the policy-making body of the AMA goes into session in December.

NORTH CENTRAL CONFERENCE MEETS IN SAINT PAUL

The North Central Conference again this year held its annual session in Saint Paul on Sunday, November 11. At that time conference members from Wisconsin, Montana, Iowa, North and South Dakota, Nebraska and Minnesota convened to discuss mutual problems in this area. Rural health, prepaid medical service, public relations and plans for the returning medical officers were scheduled on the agenda for discussion. Dr. R. D. Bernard of Clarion, Iowa, President of the North Central Conference, and also President of the Iowa State Medical Society, presided.

UNITED MEDICAL SERVICE LAUNCHES "ALL-COVERAGE" MEDICAL PLAN

As a pioneering venture in medical insurance, United Medical Service Incorporated announced on September 4 the launching of the first all-inclusive medical care insurance plan ever offered in the New York metropolitan area. The new plan comprises a group contract for the provision of medical, surgical and maternity care including after-care in the home and doctor's office as well as in the hospital.

Trial Period to Test Feasibility

This contract will be limited to a maximum of 2,500 persons already enrolled in groups of fifty or more in Associated Hospital Service of New York until further expansion has been justified on the basis of actuarial experience. The plan is to spread the contracts over as wide an area as possible in the seventeen counties covered by the plan in order that no one physician will be likely to have more than a few subscriber families as patients at this time. United Medical Service now has approximately 137,000 subscribers who are covered by more limited plans with more than 8,000 physicians participating.

Full Coverage

Contracts for the service which would provide full coverage for families with incomes up to \$2,500 or single individuals with incomes up to \$1,800, will be issued to employers instead of the individual subscribers as in previous plans. Families with incomes above \$2,500, or individuals

whose incomes exceed \$1,800, will be entitled to partial payments against their medical expenses on the indemnity principle.

The rates for the expanded service will be \$1.60 a month for individuals and \$4.00 a month for husband and wife including any number of unmarried children under eighteen years of age. Subscribers will be entitled to one visit a day from a general practitioner up to as many as twenty visits for any one illness, injury or pregnancy case. Additional visits may be authorized. An outstanding feature of the new contract is a provision which entitles subscribers to specific payments up to 50 per cent towards the services of qualified specialists.

United Medical Service will pay the participating physician \$2.00 for each visit from a subscriber to his office and \$3.00 for each visit he makes to the patient at home or in the hospital. For any call received after 8 p.m., the physician may make an additional charge which will not exceed \$2.00 for subscribers in the lower income brackets.

Here again is conclusive evidence of the alertness of the medical profession to the public need for broad medical coverage and of the determination of the profession to satisfy this need. This experiment with complete coverage will serve as a test-tube from which accurate and comprehensive actuarial calculations and conclusions can be secured and will be of great assistance, after sufficient experience has been accumulated, to other states which may contemplate launching out on broader programs than they have at present.

CONSISTENT SUPPORT OF PREPAID MEDICAL CARE SEEN

Consistent increase in membership marks the medical insurance plans sponsored by county and state medical organizations. This is the outstanding conclusion of the preliminary survey of many of these plans, which has just been completed by the Council on Medical Service and Public Relations of the American Medical Association as reported in the August 18 issue of *The Journal*. For example, Colorado shows an increase of 300 per cent; Wilmington, Delaware, 250 per cent; Massachusetts, 400 per cent; Milwaukee, 1,200 per cent; Kansas City, 300 per cent and two New York plans, 100 per cent. The Toledo, Ohio, plan

has jumped from nothing a year ago to 43,273 subscribers at the present time.

Although these voluntary medical plans have come into nation-wide prominence only recently, the study shows that the movement has gained tremendous momentum during the last year. All indications point to the same steady growth that marked Blue Cross from 1937 to 1945, which now covers some twenty million people.

"THE INDEX" VIEWS MEDICINE AS BIG BUSINESS

With the nation's medical bill in 1944 totalling \$4 billions, and a capital investment in hospital plant and equipment of \$6 billions, medicine today is one of the big businesses of America, according to the current issue of *The Index*, quarterly publication of The New York Trust Company in a discussion of socialized medicine.

The direct consumers of medical care, the article points out, paid \$3 billions of last year's bill; expenditures by federal, state and local governments were \$800 millions, and the balance was contributed by industry and philanthropy.

Analyzing the relation of national health to output of goods, this report asserts that in 1943, the nation's peak production year, approximately two billion dollars worth of purchasing power was lost because of illness. The male industrial worker lost an average of 11.4 days during the year largely on account of common ailments, and the female worker lost an average of 13.3 days.

"Two hard facts, widely quoted," it continues, "are sufficient to point up the relation that exists between finances and health: (a) for the ten most important diseases in this country, the death rate is approximately twice as high among poorly-paid unskilled laborers as it is among well-paid professional people; (b) the life expectancy of workers in industry is eight years less than that of those who are not employed in factories and mills."

In cost to the taxpayers, the medical aspects of public welfare are of growing importance, according to this study. Ten years ago, \$3.2 billions were invested in hospitals, half of which was subscribed by the government, 45 per cent came from voluntary gifts, and the remainder from commercial sources. Today, tax funds supply some \$200 millions annually for hospital care of mental

diseases alone, a similar amount for the care of the indigent in voluntary hospitals, and \$60 millions for home medical care.

Trend Toward Socialization Cited

Against the foregoing background of facts and figures, the study looks into the current and probable future trend toward socialization.

"There are many definitions of socialized medicine and its importance appears to depend primarily upon the professional bias, political ambition, emotional inheritance and economic status of the individual. But the crux of all ideas is federal control to a dominating degree."

The bank challenges the belief held in some quarters that more people can receive more benefits from medicine if the profession is socialized. On the contrary, according to the report, experience in foreign countries disproves this belief.

Federal Control Not Necessary

It is the opinion of the bank that voluntary efforts are getting into their real stride. They have not proved a drag on the country's high quality of medical proficiency or the brilliant progress made in research. By expanding and improving our public health service, by supporting various group and community systems, and by encouraging private insurance companies to add to the usefulness of their services, the country should find that federal control of medicine is not necessary to insure a healthy nation, asserts this report.

KAISER'S PERMANENTE FOUNDATION OPENS ITS DOORS TO THE PUBLIC

A disclosure recently that Henry J. Kaiser's Permanente Foundation Hospital in Oakland, built to provide prepaid medical care for 100,000 shipyard workers, had been opened to the public, threatened to bring repercussions from many quarters.

Under the new program, any person may go to the institution, with its 300 beds, eighty full-time physicians and surgeons, its laboratories, clinics and pharmacies, and apply for complete prepaid medical care. Opening of the hospital to the public came about after some 50,000 shipyard workers had left the yards following the tapering off of employment.

(Continued on page 942)



"Amebiasis is being reported with increasing frequency in U.S. Army troops overseas. Although the disease is endemic in every area where troops are stationed, poor environmental sanitation in some places makes it relatively more difficult to prevent transmission of *Endamoeba histolytica*."

Bull. U. S. Army Med. Dept. (Mar.) 1945, p. 10

Amebiasis can no longer be considered a "tropical disease"—it has recently been described as endemic in New York as well as in other sections of the country.

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KAISER'S PERMANENTE FOUNDATION

(Continued from page 940)

Criticism of the plan as it now operates have been voiced on two counts by the public: It is expensive; and subscribers have no voice in policy determination.

The President of the California State Medical Association has called a special meeting of the Council to consider the situation. Here again we see demonstrated that social experiments invariably establish patterns of precedent that are seldom reversed. Unfortunately, many of these recent precedents portend a disturbing influence on the system of medical practice in this country.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

Julian F. Dubois, M.D., Secretary

Chicago Osteopath Pleads Guilty to Fraudulent Advertising in Minneapolis

Re State of Minnesota vs. Clarence N. McNanly

On October 15, 1945, Clarence N. McNanly, fifty-two years of age, entered a plea of guilty in the Municipal Court of Minneapolis, before the Hon. D. E. LaBelle, Judge of that Court, to a complaint charging the defendant with fraudulent advertising. McNanly was severely rebuked by Judge LaBelle for his "racket." Judge LaBelle sentenced McNanly to pay a fine of \$75.00 or serve thirty days in the Minneapolis Workhouse. The defendant paid the fine after being told by the Court that a repetition of his offense would result in a straight jail sentence. McNanly stated to the Court that he was returning immediately to Chicago and that he intended to stay there.

McNanly was arrested on Sunday, October 14, 1945, at the Radisson Hotel, Minneapolis, where he was conducting an open meeting for persons who were interested in the subject of "Perfect Vision Without Glasses." McNanly had sent out advance notice to a selected list of chiropractors inviting them to the meeting. McNanly admitted, however, after his arrest by Inspector Bernath of the Minneapolis Police Department, that his true purpose in conducting the meeting was to obtain a suitable number of chiropractors to take a course in the so-called "Bates Method" of treating optical or visual deficiency. McNanly intended to conduct the course on November 10 and 11, at Minneapolis and to charge a fee of \$100 for each chiropractor enrolled in the course. At the meeting McNanly distributed a pamphlet entitled: "Perfect Sight Without Glasses." The pamphlets contained misleading and deceptive statements, and a complaint was accordingly filed against the defendant.

McNanly represented himself as an osteopath with an office at 4643 North Broadway, Chicago, Illinois. He also stated that he was a graduate of the Lindlahr College of Nature Cure, Chicago, and that he holds an Illinois license as an "Other Practitioner," of so-called drugless healing.

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* *Laryngoscope*, Feb. 1935, Vol. XLV, No. 2, 149-154
Laryngoscope, Jan. 1937, Vol. XLVII, No. 1, 58-60

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◆ Reports and Announcements ◆

MEDICAL BROADCAST FOR NOVEMBER

The following radio schedule of talks on medical and dental subjects by William O'Brien, M.D., Director of Postgraduate Medical Education, University of Minnesota, is sponsored by the Minnesota State Medical Association, the Minnesota State Dental Association, the Minnesota Hospital Association and the University of Minnesota School of the Air.

Nov. 1— 5:15 P.M. WCCO	Medical and Vocational Rehabilitation
Nov. 3—11:30 A.M. KUOM-KROC	Medicine in the News
Nov. 7—11:00 A.M. KUOM	Clean Hands are Safe Hands
Nov. 8— 5:15 P.M. WCCO	National Pharmacy Week
Nov. 10—11:30 A.M. KUOM-KROC	Medicine in the News
Nov. 14—11:00 A.M. KUOM	Your Teeth Influence Your Whole Body
Nov. 15— 5:15 P.M. WCCO	Rehabilitation of the Tuberculous
Nov. 17—11:30 A.M. KUOM-KROC	Medicine in the News
Nov. 21—11:00 A.M. KUOM	Voice and Face Reflect the Personality
Nov. 22— 5:15 P.M. WCCO	Rehabilitation of the Hard of Hearing and of the Visually Handicapped
Nov. 24—11:30 A.M. KUOM-KROC	Medicine in the News
Nov. 26— 4:45 P.M. WCCO	Your Hospital in Peace-Time
Nov. 28—11:00 A.M. KUOM	Good Eyesight Makes Learning Easier
Nov. 29— 5:15 P.M. WCCO	Dental Restorations

MINNESOTA SOCIETY OF INTERNAL MEDICINE

The Minnesota Society of Internal Medicine met on October 16 in the rooms of the Ramsey County Medical Society in St. Paul, for election of officers. Dr. Reuben C. Johnson, of Minneapolis, is the new president and Dr. Charles Watkins, of the Mayo Clinic, is vice president. Dr. Alex Brown, also of the Mayo Clinic, was re-elected secretary-treasurer.

Dinner was served at the Hotel Lowry and E. C. Richardson, assistant special agent in charge of the Saint Paul office of the Federal Bureau of Investigation, spoke on the part taken by the FBI in the war.

* * *

WABASHA COUNTY

Lake City physicians were dinner hosts at the Royal Cafe to members of the Wabasha County Medical Society and their wives, on the occasion of the eleventh annual meeting of the Society on October 4.

Officers for the ensuing year were elected and Dr. W. F. Wilson, Lake City, secretary and treasurer, was returned to office for the fiftieth consecutive term. Other officers chosen were: Dr. E. W. Ellis, Elgin, president; Dr. B. A. Flesche, Lake City, vice president; Dr.

(Continued on page 946)



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Nephrectomy
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WABASHA COUNTY

(Continued from page 944)

C. G. Ochsner, Wabasha, censor for three years; Dr. E. C. Bailey, Lake City, was named delegate to the State Association meeting, and Dr. B. J. Boquet, the alternate.

Dr. Frank H. Krusen, of the Mayo Clinic, guest speaker, discussed "Out of Bed—Into Action," illustrated with motion pictures.

The president's address, by Dr. C. G. Ochsner, was "The Use of Vitallium Tubes in Common Duct Reconstruction, with Case Report."

Recent activities of the State Board of Health were covered by Dr. A. J. Chesley, secretary and executive officer.

Dr. B. A. Flesche, recently discharged from the Army Medical Corps, after several years of service, talked on "Some Experiences While in Service."

Late revisions of the Emergency Maternity and Infant Care program for the wives and sick infants of men in military service were reported by Dr. V. O. Wilson, director for Minnesota.

* * *

WEST CENTRAL MINNESOTA

Attended by the entire membership, the West Central Minnesota Medical Society held a special dinner meeting at the Golf Club House at Morris on October 10, with Dr. Charles Bolsta, of Ortonville, as guest of honor. Dr. Bolsta is retiring after fifty years of practice in Ortonville.

At the conclusion of the dinner, Dr. Herman Linde, of Cyrus, president of the Society, opened the program of the evening with a brief talk on Dr. Bolsta's work. Dr. Clarence Dennis, of the University of Minnesota, one of the guest speakers, was then introduced by Dr. I. L. Oliver. Dr. Dennis's subject was "Pre-operative and Postoperative Care."

Dr. William O'Brien, Director of Postgraduate Education, University of Minnesota, introduced by Dr. Fred Behmler, of Morris, was the next speaker. Dr. O'Brien spoke at some length on Dr. Bolsta's medical career, particularly stressing the importance of his work in behalf of organized medicine in Minnesota.

Dr. Bolsta responded with an expression of his appreciation for the tribute paid to him, and the evening concluded with each one present personally congratulating Dr. Bolsta.

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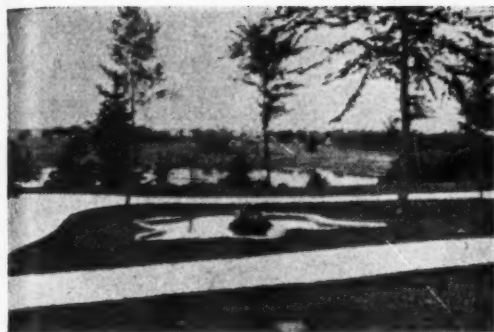
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WOMAN'S AUXILIARY

MRS. EDWARD V. GOLTZ, *President*
Saint Paul, Minnesota

MRS. JOHN K. BUTLER, *Editor*
Carlton, Minnesota

PRESIDENT'S MESSAGE

We are approaching another year in the history of the Women's Auxiliary to the Minnesota State Medical Association. We stand on the threshold of a new era which offers unlimited opportunities to prove the value of our work as an affiliated member of the medical profession.

The extent of our growth and progress in the coming year and well as in the years to follow will be determined by our ability to keep abreast with the aims and purposes of the medical profession. Each Auxiliary member should dedicate herself now to the study of the many health and social problems awaiting us in the postwar era and should prepare herself to be a leader in her community in these fields. The doctor's wife will be expected to play an even greater role in the future than she has in the past.

As your president, I extend a cordial welcome and greeting and a sincere hope that the coming year will see your efforts as outstanding contributions to the goal which we all hope to attain.

EDITH A. GOLTZ, *President*

STATE BOARD

The first State Board meeting of 1945-46 was held in Saint Paul on Thursday, November 8.

BLUE EARTH COUNTY

Blue Earth County has chosen Mrs. George Penn as president; Mrs. A. E. Sohmer, vice president; Mrs. Roger Hassett, secretary; and Mrs. Philip Hoepfer, treasurer.

HENNEPIN COUNTY

Mrs. William J. Byrnes organized the Hennepin County medical Auxiliary in 1910, giving it the unique distinction of being the first chapter to be organized in the United States. The Auxiliary will commemorate its thirty-fifth anniversary at a musical tea and reception for new members at the home of Mrs. Arnold J. Campbell, Rolling Green. Mrs. Harold Stassen will be the guest of honor.

KANDIYOHI COUNTY

At Hultgren Lodge, Glen Lake, the annual picnic was held with the doctors as hosts. Dr. A. O'Brien talked on "Returning Medical Veterans."

MOWER COUNTY

Mrs. C. C. Allen was hostess at the September meeting at which the members decided to make cancer dressings and help their local hospital as the year's project.

(Continued on page 950)

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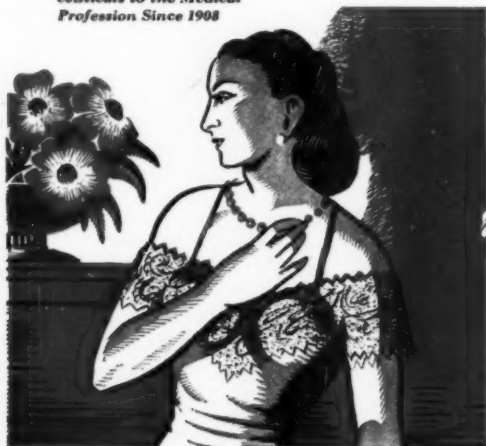
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(Continued from page 948)

OLMSTED-HOUSTON-FILLMORE-DODGE

The child health project, sponsored by the Mayo Clinic of Rochester, interested many of these members. Mrs. H. M. Keith is president of the board of the Demonstration Nursery School which is part of the project. This school has one hundred pupils enrolled.

Mrs. Keith has also been in charge of the Grey Ladies who trained twenty-seven ladies during the summer and worked 2,460 hours in the hospitals.

Thirty-one nurses' aides have been trained and fifty nurses' aides have worked 3,000 hours in the local hospitals. Mrs. L. M. Randall has had charge of recruiting and organizing the aides.

PARK REGION

The doctors and their wives met at the River Inn, Fergus Falls, and heard Dr. B. J. Branton of Willmar. The Auxiliary has been 100 per cent active in the Red Cross—knitting, sewing, making surgical dressings and making scuffs.

RAMSEY COUNTY

Mrs. William Vonder Weyer reports that this summer \$100.00 was donated to the Red Cross Canteen in the Union Station, Saint Paul, to buy homemade cookies for all the soldiers on the hospital trains going through Saint Paul. Twenty members each week all summer supplied homemade cookies at the canteen. Mrs. H. C. Wold was in charge of this project.

The Auxiliary's philanthropic program for 1945-46 includes making dressings for Our Lady of Good Counsel Free Cancer Home, donating \$225.00 for the Red Cross Canteen at the Union Depot as well as augmenting their donations during the year.

RENVILLE COUNTY

Senator Gage of Fairfax was guest speaker at the September meeting of the Renville County Medical Auxiliary at Olivia, Minnesota. Husbands of members were in attendance at the meeting.

RICE COUNTY

Mrs. Robert F. Mears of Northfield is president of the Rice County Auxiliary which has thirteen members.

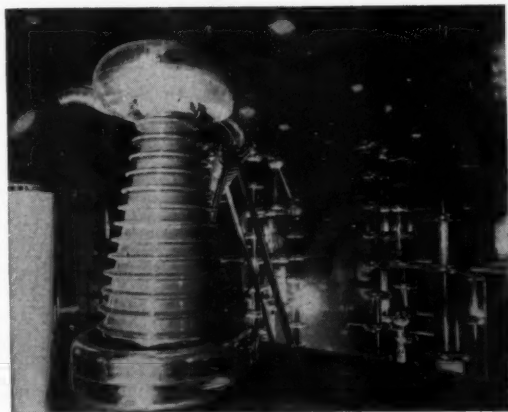
ST. LOUIS COUNTY

Mrs. M. A. Nicholson entertained the members at her summer home at Pike Lake. The annual budget was presented by Mrs. A. T. Laird of Duluth. The Auxiliary plans to increase its philanthropic work 100 per cent this year, with special attention to the lounge for "up patients" at Nopeming Sanatorium which was furnished by them a few years ago. This year they plan to give current novels, subscriptions to magazines and to buy new records.

(Continued on page 952)

MINNESOTA MEDICINE

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WOMAN'S AUXILIARY

(Continued from Page 950)

SCOTT-CARVER

It is the custom of Scott-Carver Auxiliary to meet with the Medical Society. The September meeting was held at Shakopee. Mrs. P. M. Fisher of Shakopee is president. Members hope that with gas rationing lifted they can become more active.

SOUTHEASTERN MINNESOTA

Mrs. Donald D. Nealy is president of Southwestern Auxiliary, consisting of twenty-five members from many counties. While wartime restrictions forced them to be inactive, they have nevertheless kept their organization together and are now looking forward to more frequent and productive meetings.

STEARNS-BENTON

Mrs. C. J. Luckemeyer, St. Cloud, will be hostess for the first meeting of the year. Officers are: Mrs. Joseph B. Gaida, St. Cloud, president; Mrs. Everett J. Schmitz, Holdingford, vice president; Mrs. John Getz, St. Cloud, secretary; and Mrs. T. W. Hovorka, St. Cloud, treasurer. Making afghans for the Red Cross and donating to the cancer program formed their summer project.

UPPER MISSISSIPPI

Mrs. Callahan was hostess at Ah-Gwah-Ching to the thirty members of her Auxiliary. Mrs. J. A. Thabes, Sr., of Brainerd, presided.

WASECA COUNTY

There are only six members in this chapter, but they are very busy. This month they met at Mrs. A. J. Swenson's home to make new sheets for the hospital.

WASHINGTON COUNTY

Mrs. F. A. Stevens of Lake Elmo entertained at a pot-luck luncheon and social hour. Mrs. D. Kalinoff, Mrs. John W. Stuhr and Mrs. F. M. McCarten are the officers.

WINONA COUNTY

Winona County Auxiliary meets four times a year on the first Monday of the month. Mrs. F. T. Benoit is president.

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◆ Of General Interest ◆

Dr. Gordon New, Mayo Clinic, has been in New York City, where he attended a meeting of the American Society of Plastic and Reconstructive Surgery.

* * *

Dr. Joseph F. Borg has announced the reopening of his offices at 918 Lowry Medical Arts Building, Saint Paul, Minnesota. His practice is limited to internal medicine.

* * *

Announcement has been made of the promotion of Captain Thomas Byrd Magath, Rochester, to commodore in the Medical Corps of the United States Medical Reserve.

* * *

Dr. Arthur Martin Olson, Mayo Clinic, has been in Washington, D. C., for a meeting of the Committee on American Registry of Pathology, Division of Medical Sciences, National Research Council.

* * *

Two Minnesota physicians were among the twenty-four doctors landed at La Guardia Field from the European theater on September 24, prior to discharge from the army. They were Captain Herschel Kaufman, of Minneapolis, and Captain Albert E. Krieser, of Mankato.

* * *

Dr. Frank H. Krusen, of the Mayo Clinic, has returned from Washington, D. C., where he presided at the joint meeting of the Scientific Advisory Committee and the Committee on War and Postwar Physical Rehabilitation and Reconditioning of the Baruch Committee on Physical Medicine.

* * *

At the fall meeting of the Minnesota Society of Internal Medicine, held in Saint Paul, October 15, Dr. Reuben C. Johnson, of Minneapolis, was elected President, Dr. Charles Watkins, of Rochester, Vice President, and Dr. Alex Brown, of Rochester, Secretary-Treasurer (re-elected). The next meeting of the Society will be held in Duluth in June, 1946.

* * *

Major Oram R. Lawry, Jr., formerly of Portland, Maine, and on assignment in internal medicine and medical specialties in the Mayo Foundation from September 23 to November 12, 1944, was recently commended by the commanding officer of the 65th General Hospital for his clinical work with that medical unit. He entered the service in July, 1941.

* * *

Dr. and Mrs. James C. Crabtree, Jr., with their two-year-old son, are now settled in their new home in Starbuck, where the doctor will engage in general practice. Dr. Crabtree, a graduate of Tulane University, New Orleans, has been in residency for the past eighteen months at the Northern Pacific Hospital in Saint

Paul. He served his internship at Hillman Hospital, Birmingham, Alabama.

* * *

Announcement has been made of the resignation of Dr. Stephen Baxter from the Minneapolis Board of Public Welfare. Dr. Baxter's resignation followed the refusal of the majority of the Board to support the recommendation of Dr. D. W. Pollard, superintendent of the General Hospital, for dismissal of an orderly for striking a mental patient in the psychopathic ward.

* * *

After an absence from his practice of five years, Lt. Colonel Richard B. Hullsiek has returned to Saint Paul and has reopened his office in association with his brother, Dr. Harold Hullsiek.

Inducted into the Army Medical Corps in 1940, Colonel Hullsiek served as State Medical Director for Selective Service for two and a half years. For the past two years he has been in the European theater. Recently he had been with the Eighth Convalescent Hospital, with General Patton's Third Army, and later with the Ninth Army in Germany.

* * *

Since reporting Dr. A. M. Ridgeway, of Ahnandale as the oldest practicing physician in Minnesota, both in age and term of service, MINNESOTA MEDICINE has been informed that Dr. Albert Walker, of Duluth, opened his offices there in the summer of 1890 and has been in continuous practice ever since. So he, too, has completed fifty-five years of medical service.

Dr. Walker, who will be eighty-three on December 3, graduated from the University of Western Ontario, London, Ontario, in 1888, and from Bellevue Medical College in 1889. With Mrs. Walker, he celebrated the fiftieth anniversary of their marriage last August. Their son, Major Arthur E. Walker, is post surgeon at the Umatilla Ordnance Depot, Umatilla, Oregon.

* * *

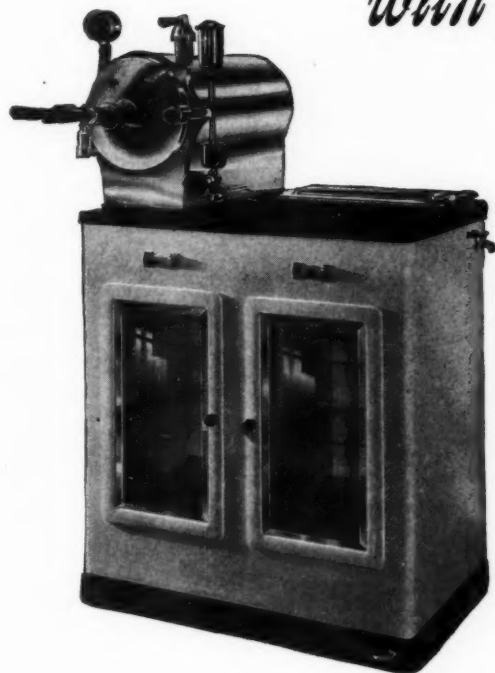
With the closing of his offices at Grand Rapids in September, Dr. H. E. Binet terminated almost thirty years of medical practice in the Range area. Dr. Binet graduated from Northwestern University in 1916, but he had previously attended the University of Minnesota. Immediately following his graduation he returned to his native Grand Rapids, and began his practice in association with Dr. M. N. Hursch. He is a veteran of World War I, where he served in the Army Medical Corps.

First president of the Range Medical Society, Dr. Binet is a fellow of the American College of Surgeons, and a member of the Minnesota State Medical Association and the American Medical Association.

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(Continued on page 956)

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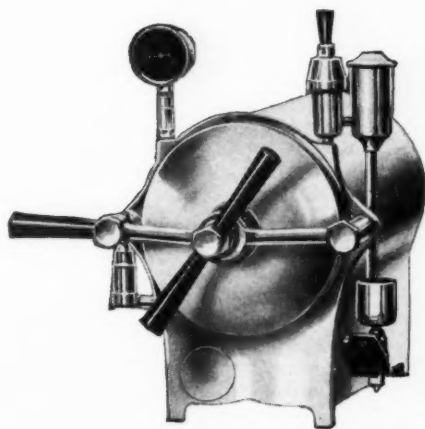


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(Continued from page 954)

sion have left Dr. Binet little time for leisure pursuits, so he is retiring while still young enough to enjoy doing things long planned, but which he has never found time to begin.

The growing importance of Minneapolis as a medical center was stressed by Dr. James K. Anderson, retiring president of the Hennepin County Medical Society, in an address at the installation of the new officers on October 1. Figures quoted by Dr. Anderson, compiled from a questionnaire sent to hospitals, wholesalers and manufacturers of drugs, lenses, artificial limbs, surgical supplies, show that medical care in Minneapolis is a \$16,000,000 industry. During the past year 28,000 out-of-town patients were cared for in hospitals in the city, while an additional 39,000, not requiring hospitalization, were treated by Minneapolis physicians. During the year 88,388 hospital patients required professional and nonprofessional service from 3,421 persons, representing a payroll of \$4,079,000. Medical supplies sold to hospitals by Minneapolis business houses totaled \$3,201,000.

The Legion of Merit was recently awarded to Lieutenant Colonel Isidore A. Feder, formerly of Brooklyn, New York. He was on assignment in internal medicine and medical specialties at the Mayo Foundation from July 3, to August 31, 1943. The citation accompanying the award read "For exceptionally meritorious conduct in the performance of outstanding service, as chief of medical service of the 45th Evacuation Hospital from August 2, 1944, to May 10, 1945. Lieutenant Colonel Feder made many recommendations on the treatment of battle casualties which have been adopted throughout the Ninth United States Army. The skill and dispatch with which he organized a tuberculosis service in Buchenwald at the notorious German concentration camp rapidly relieved a critical epidemic risk at that institution. The judgment and devotion to duty displayed by Lieutenant Colonel Feder reflect highest credit on himself and on the armed forces of the United States." He entered the service on August 12, 1942; he is recipient of the Bronze Star.

The Hennepin County Medical Society has announced the return to practice on October 1 of the following Minneapolis physicians:

Dr. Harlan Alexander—offices in the Physicians and Surgeons Building. A captain in the Army Medical Corps, Dr. Alexander entered service in 1942. He was battalion surgeon in the invasions of Attu, Kwajalein, Leyte, and Okinawa, and was awarded the Bronze Star and the Oak Leaf Cluster.

Dr. Robert N. Barr has returned to his position as director of local health in the State Department of Health. A lieutenant colonel, Dr. Barr entered service in February, 1942, and was on duty in New Caledonia and Guadalcanal for thirty-two months.

Dr. Ralph Creighton—offices in the Medical Arts

MINNESOTA MEDICINE

OF GENERAL INTEREST

Building. Inducted into the Army Medical Corps in January, 1941, he served as medical officer in the Thirty-fourth Division and Headquarters of the Second Corps in Ireland, England, Scotland, Africa, Sicily and Italy. His rank at retirement was lieutenant colonel and he wears the Bronze Star and six Battle Stars.

Dr. Paul R. Gronvall, lieutenant commander in the Navy, was commissioned in December, 1943, and served in the European theater. His offices for the practice of surgery are in the Medical Arts Building.

Dr. Solomon E. Horowitz, dermatologist and allergist—offices in the Medical Arts Building. A captain in the Army Medical Corps, Dr. Horowitz was inducted in July, 1942, and served in Africa, Italy and France.

Dr. Frank L. Kavanor, eye, ear, nose and throat specialist—offices in Medical Arts Building. A reserve officer of World War I, Dr. Kavanor was commanding officer of the station and camp hospitals in this country, with rank of full colonel.

* * *

Dr. J. J. Ederer, formerly of Mahnom, Minnesota, has disposed of his practice there and is now living in Minneapolis (Morningside). The Mahnom Hospital, which Dr. Ederer has operated for a number of years, was purchased on October 15, 1945 by the Sisters of St. Benedict.

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Neuro-Surgical Cases

(Continued from page 919)

patients died. One individual had a cerebral concussion, skull fracture, intracranial shell fragments, a brain abscess, meningitis and bronchopneumonia. Operation was performed elsewhere and at this hospital. The second death occurred in an individual who had had a severe cerebral concussion, a skull fracture and a diffuse subdural hemorrhage. The third individual who died had a severe concussion and a subdural hematoma found at autopsy. Death occurred thirteen hours after injury.

6. The fifty-two nerve operations consisted of fourteen formal nerve sutures, two nerve grafts, twenty-three neurolyses, two neurectomies, three Hersage procedures, three in which intraneural foreign bodies were removed, two sympathectomies and three scalenotomies.

7. Ten patients were operated upon with a diagnosis of "prolapsed nucleus pulposus." One of these cases presented a negative exploration. Seven of the patients had satisfactory relief of pain, but only three returned to duty from this hospital.

RADIO TUBERCULOSIS PROGRAM

The role of the family doctor in tuberculosis control is the subject of a series of thirteen broadcasts, called "The Constant Invader," which will be presented on WCCO and other Minnesota radio stations this fall.

The series, which represents the first major, nationwide effort of the National Tuberculosis Association to use radio as a channel for health education, deals with the various phases of tuberculosis control. It is sponsored by the Christmas Seal organizations of the state.

On WCCO, the first program was presented at 4:45 p.m., Saturday, November 3. "The Constant Invader" will be heard at the same hour every Saturday through January 26.

Dr. A. J. Cronin, author of "Hatter's Castle," "The Keys of the Kingdom," and "The Green Years," is the narrator of the series.

One program deals with the advances in medicine and surgery in the treatment of tuberculosis.

The program on the family doctor tells how one physician solved the mystery of positive reactions among members of a typical family and saw to it that the ill member of the family went immediately to a nearby sanatorium.

A program devoted to medical research dramatizes the long-range experiments of Professor Rudolph Anderson of Yale University on the chemical analysis of the tubercle bacillus.

Other subjects, included in the series are: the ways in which community agencies work together toward the solution of the TB problem, the work of the public health nurse in a rural community, the necessity of tuberculin testing in schools, the "hows" of an industrial x-ray survey, the necessity of examining family contacts, modern sanatorium care, a typical college health program, TB as a problem among old people, the value of rehabilitation, and the "hows" and results of health education.

Classified Advertising

WANTED—Physician for general practice and obstetrics, also to assist in surgery, in Minneapolis. Good opportunity for diagnostic training. X-ray facilities and complete clinical laboratories. State school, year of graduation and internship. Address D-136, care MINNESOTA MEDICINE.


FOR SALE—McIntosh Hanovia ultraviolet, hot quartz lamp; mobile unit. Price reasonable. Address V. Ogren, 3448 Emerson Avenue South, Minneapolis, Minnesota. Telephone: REgent 9448.

FOR SALE—X-ray machine complete with fluoroscope, x-ray table, and other attachments, \$300; 2 infrared lamps, ultraviolet lamp, surgical instruments—all priced reasonably. Complete equipment for testing eyes, 8-bulb cradle lamp, suction pump, microscope, heavy rubber gloves, lead gloves, physician's and surgeon's grip (brand new), splints, and belts of various sizes and types. Address Mrs. Edith Watson, Browns Valley, Minnesota; or telephone Bernice Bates, Minneapolis—Main 7974.

PHYSICIAN WANTED—Good country town with drug store, good schools and churches. An exceptionally large territory. Address D-127, care MINNESOTA MEDICINE.

ASSOCIATE WANTED—By general practitioner in county seat town of 2,800, central Minnesota. New hospital under construction. Prefer discharged serviceman and someone with special training in E. N. T. or O. B. work, but anyone considered. Permanent association, if satisfactory. Liberal salary to start. Address D-131, care MINNESOTA MEDICINE.

PHYSICIAN WANTED—In south central Minnesota town; two hospitals within 12-mile radius. Complete office equipment, including Westinghouse x-ray unit, available on terms. Excellent opening for young physician interested in general practice. Address N. L. Larson, Atwater, Minnesota.



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